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Change Over Time in the Context, Outcomes and Inequalities of Secondary Schooling in Scotland, 1985-2005



CHANGE OVER TIME IN THE CONTEXT, OUTCOMES AND INEQUALITIES OF SECONDARY SCHOOLING IN SCOTLAND, 1985-2005

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EXECUTIVE SUMMARY

1 Introduction

- 1.1 The Scottish School Leavers' Surveys (SSLS) provide a rich source of information about changes in young people's experiences, attitudes and transitions in the period 1985-2005.
- 1.2 Data from the surveys between 1985 and 2001 were brought together as a time-series dataset for a recent research project on *Education and Youth Transitions in England, Wales and Scotland 1984-2002* which was funded by the Economic and Social Research Council (ESRC). The current study updates the Scottish time-series to 2005 by including the last SSLS cohort.
- 1.3 Based on the time series, this report seeks to address three questions:
 - How did the context of secondary schooling change over the period 1985-2005?
 - How did young people's school experiences and attainments change over this period?
 - To what extent did inequalities in attainment change over this period?

2 The Scottish School Leavers' Survey

- 2.1 The SSLS used postal questionnaires to survey nationally representative cohorts of young people at age 16/17, with a follow-up survey at age 18/19.
- 2.2 The reliability of findings from a survey such as SSLS are crucially dependent on the extent to which young people have been willing to respond to questionnaires. Response rates have decreased over time, and potential bias arising from low response rates must be borne in mind when interpreting the findings.
- 2.3 The Scottish Government has decided to discontinue the SSLS, and consequently 2005 is the endpoint for the cohort-data time series.
- 2.4 The aim in constructing the time-series dataset from SSLS was to derive a set of variables for each cohort that is comparable over time.
- 2.5 National qualifications systems have changed over time, so we used formal equivalences to create variables summarising qualifications and attainment for the time-series.
- 2.6 Social-class classifications have changed over time, so we derived an updated classification of occupations to create variables summarising social class that are comparable over time.

3 The changing context of secondary schooling

- 3.1 This section provides a brief reminder that the context of secondary schooling changed substantially between 1985 and 2005, as a result of:
- economic and industrial restructuring, and consequent changes in employment and training opportunities for young people;
 - increasing emphasis on educational credentials;
 - reduction of opportunities for low-attaining minimum-age school leavers and increase in proportion of students staying on to post-16 education;
 - increasing participation and status of women in the labour force; changing perceptions of gender roles;
 - developments in curriculum and assessment;
 - policies to encourage market competition, parental choice, performance management and quality assurance, with a focus on improving schools and raising attainment;
 - more recent policies to address the needs of young people with low attainment, and those not in education, employment or training. (For the most part these are beyond the timescale of the current study.)

4 Social segregation between schools

- 4.1 Changes in social segregation between schools are an important aspect of the changing context of secondary schooling in Scotland.
- 4.2 Social segregation arises where pupils from lower social class backgrounds are concentrated in particular schools to the extent that they are isolated from pupils of higher social class background, or *vice versa*. It undermines the comprehensive system of secondary schooling in Scotland, and reinforces social inequalities.
- 4.3 High levels of social segregation between schools are associated with large between-school differences in attainment.
- 4.4 The pattern of trends over time does not show significant rise in segregation in the period following the introduction of parental choice. In fact segregation in the Scottish sample as a whole was significantly lower in 2002 than 1988.
- 4.5 Levels of segregation in a sub-sample of the four cities are significantly higher than in other parts of Scotland. Segregation between schools is largely a problem for the cities - it pre-dated parental choice legislation, and has not shown any decline in the period to 2002.

5 Overall trends in attainment and participation

- 5.1 Over the two decades covered by this study there have been upward trends in:
- attainment at age 16 and age 18
 - participation in education at age 16+ and 18+

- 5.2 These trends have been associated with polarisation between those with high and low S4 Standard grade attainment: attainment and participation at age 18+ has increased to a greater extent among young people in the higher attainment bands than among those in the lower attainment bands.
- 5.3 Perceptions of the compulsory school experience were very positive among all attainment bands, but were especially positive among high attainers.

6 Inequalities by gender, family background, school characteristics and location

- 6.1 A recent high-profile review of Scottish education by the Organisation for Economic Cooperation and Development (OECD) has highlighted issues of inequality. Although Scottish education has many strengths, and performs at a very high standard in the Programme of International Student Assessment (PISA), there are serious inequalities associated with socio-economic status, poverty and deprivation (OECD 2007, p15).
- 6.2 The SSLS provides a unique resource for analysing inequalities in young people's experiences of education and youth transitions in Scotland. Previous studies based on SSLS have identified inequalities in:
 - curriculum (Croxford 1994, 2003; Raffe *et al* 2001; Tinklin 1999);
 - attainment (Biggart 2000; Croxford and Raffe 2007; Gamoran 1996; Howieson and Iannelli 2008; Raffe *et al* 2006);
 - post-16 participation (Biggart 2000; Howieson 2003; Howieson and Iannelli 2008; Raffe 2003; Raffe *et al* 2001);
 - entry to higher education (Iannelli 2005; Tinklin and Raffe 1999); and
 - experiences in the labour market (Biggart 2000; Howieson 2003; Howieson and Iannelli 2008; Raffe 2003).
- 6.3 The current study builds on this work, and focuses on the extent to which inequalities in attainment at ages 16 and 18/19 have changed over time.
- 6.4 Social class is a major source of inequality. Over time the effect of social class on attainment at age 16 has been reduced slightly. The effect of social class on attainment at age 18 increased in the 1980s and 1990s, but narrowed slightly between 1999 and 2005.
- 6.5 Other aspects of family background, such as parents' education and main activity, have additional effects on attainment; over time the effect of most of these factors has been reduced at age 16, but has remained (more or less) the same at age 18.
- 6.6 All other things being equal, females had higher attainment than males at age 16 and at age 18, and the gender gap for both age groups increased over time.
- 6.7 School intake characteristics – especially the proportion of students from managerial/professional families - have additional effects on the attainment of

students attending the school; over time the effect of school intake has been reduced at age 16, but has remained the same at age 18.

- 6.8 At age 16, schools in remote localities have higher average attainment than schools in cities, urban areas and accessible areas, and the advantage of remote rural schools increased over time. At age 18 the pattern was different, with schools in the four big cities having higher average attainment than other schools; this advantage of city schools did not change over time.

7 Discussion

- 7.1 Secondary schools in Scotland – and society more generally – have had to adapt to major changes in socio-economic conditions since the 1980s. Curriculum and qualification systems have been adapted to meet the needs of a wider ability range. In the light of these reforms, it is not surprising that overall levels of participation and attainment have risen considerably over the period.
- 7.2 Social class differences in attainment are considerably wider than gender differences, but less attention is paid to these inequalities because statistics are less readily available. The SSLS has been a really valuable resource for highlighting these issues, and its discontinuation will make it difficult to analyse social class inequalities in education in future.
- 7.3 Findings from this study confirm that social class inequalities at age 16 have diminished slightly since 1998 as the attainment of working class pupils has risen. They provide support for the view that the reduction in inequality at the age 16 stage is associated with the expansion of Standard Grade to almost universal participation and attainment.
- 7.4 Social class inequalities in attainment at age 18/19 have risen over time as pupils of higher social class status have increased their levels of advantage in qualifications. However, there is some indication that the Higher Still reforms may have had a positive effect on the attainment of working class students.
- 7.5 The different trends in inequality at ages 16 and 18/19 provide support for the suggestion of Raffe et al (2006) that increasing levels of attainment and participation at age 16 have pushed the critical period for educational inequalities up to attainment at age 18
- 7.6 In conclusion, the past two decades have witnessed major changes in the context of secondary schooling and substantial increases in attainment. However, underlying social inequalities within the system remain as powerful as ever.

1 INTRODUCTION

- 1.1 The period 1985-2005 witnessed major changes in Scottish education, caused partly by long-term social and economic changes, and also by changes and developments in education policy. It could be argued that changes in education policy –such as the introduction of Standard Grade - represent a continuum of the reform process set in train by comprehensive reorganisation in the 1960s. On a fairly regular basis over this period¹ the Scottish School Leavers Surveys (SSLS) asked young people about their experiences and achievements, their views of schooling and their transitions to the labour market. Thus the SSLS provided a unique resource to examine the changing experiences of secondary schooling since the 1980s. Importantly, the SSLS also collected information on family background that made possible the analysis of social inequalities in education.
- 1.2 Data from the surveys between 1985 and 2001 were brought together as a time-series dataset for a recent research project on *Education and Youth Transitions in England, Wales and Scotland 1984-2002* which was funded by the Economic and Social Research Council (ESRC). The current study updates the Scottish time-series to 2005 by including the last SSLS cohort, thanks to sponsored research funding from the Scottish Government. 2005 is the end point for the time-series because the SSLS will not be carried out in future
- 1.3 This report uses the updated time-series to describe changes in the context of secondary schooling, and in young people's attainments and experiences of schooling. It uses statistical models to analyse inequalities in young people's outcomes in relation to gender, family background, school characteristics and location, and the extent to which these have changed over time. It seeks to address three questions:
 - How did the context of secondary schooling change between 1985 and 2005?
 - How did young people's school experiences and attainments change over the period?
 - To what extent did inequalities in attainment change over this period?
- 1.4 The focus on inequalities in schooling is timely, in the light of the recent review of Scottish education by the Organisation for Economic Cooperation and Development (OECD) which highlighted serious problems of socio-economic inequality, a widening achievement gap, and large numbers of 16-19 year-olds who are not in education, employment or training (OECD 2007). These are important issues for the Scottish Government as it seeks to create a fairer Scotland.
- 1.5 The report has the following sections:
 - The Scottish School Leavers Surveys
 - The changing context of secondary schooling

¹ Surveys at age 16+ took place in 1985, 1987, 1989, 1991, 1997, 1999 and 2003, with follow-up surveys at age 18+ two years later.

- Social segregation between schools
- Overall trends in attainment and participation
- Inequalities by gender, family background, school characteristics and location
- Discussion

2 THE SCOTTISH SCHOOL LEAVERS SURVEYS

- 2.1 The study is based on the Scottish School Leavers' Surveys (SSLS). The SSLS were nationally-representative, general purpose, postal-questionnaire surveys of young people in Scotland. They were initially commissioned by the Scottish Office Education Department and subsequently by the Scottish Government.
- 2.2 The surveys started in the 1970s as surveys of young people who had recently left school from S4, S5 or S6. From 1985 the SSLS was redesigned to include a new cohort series focusing on cohorts of young people after completion of their final year of compulsory schooling (in Scotland this is the S4 year-stage). The data are longitudinal, and include young people's outcomes and experiences of school to age 16, and their outcomes at age 18/19 including post-compulsory transitions and labour market, (with some cohorts surveyed again at 22/23).
- 2.3 The SSLS cohort surveys were carried out on a fairly regular basis from 1985 to 2005. Surveys from 1985-1991 were designed and conducted by the Centre for Educational Sociology (CES), but since 1992 surveys were designed and conducted by the National Centre for Social Research (Natcen) and its Scottish branch Scotcen. Sample details were provided by schools from administrative data.
- 2.4 In recent years the design of the SSLS as a postal questionnaire survey has become problematic because of low response rates (an increasing problem for postal surveys more generally). Various options for its future were reviewed (Howieson et al 2008) prior to the decision being made to discontinue the SSLS. Consequently 2005 is the endpoint for the cohort data time series.

Table 2.1: Scottish School Leavers Survey: youth cohort time series

Completed S4	Age 16/17 Sweep 1	Age 18/19 Sweep 2
1984	1985	1987
1986	1987	1989
1988	1989	1991
1990	1991	1993
(1992 cohort reconstructed from leavers surveys)	(Leavers) S4:1993, S5:1994, S6:1995	1995
(1994 cohort not surveyed)		
1996	1997	1999
1998	1999	2001
(2000 cohort not surveyed)		
2002	2003	2005

- 2.5 As part of the recent ESRC-funded *Education and Youth Transitions (EYT)* project, a research team at CES brought together data from the SSLS and the England and Wales Youth Cohort study (YCS) to create comparable cohort time-series datasets. The Scottish time series constructed for the EYT project (see Table 2.1) started with cohorts of young people who completed secondary schooling in 1984 and ending with Scottish cohorts who completed

S4 in 1998. The first activity of the current sponsored research was to extend the Scottish cohort time series by adding data for the last SSLS cohort, who completed S4 in 2002, and were aged 18/19 in 2005.

Survey response, attrition and weighting

- 2.6 The reliability of findings from a survey such as SSLS is crucially dependent on the extent to which young people have been willing to respond to questionnaires. In the early years of SSLS, response rates were extremely high – 81% of the 1984 cohort responded to the first sweep of the survey. However, over time response rates have fallen markedly, and just 45% of the 2002 cohort responded to the first survey sweep (Table 2.2). Table 2.2 shows that respondents to the SSLS at age 18 averaged 50% of the initial target sample between 1984 and 1988, but were only 31% of the 2002 cohort.

Table 2.2: SSLS: Respondents as % of initial target sample

Cohort	survey at 16	survey at 18
1984	81	50
1986	81	52
1988	77	50
1990	69	43
1996	68	39
1998	63	42
2002	45	31

- 2.7 This low response to recent surveys presents particular problems for analysis because respondents may not be representative of the whole cohort. Bias in the findings may result because some groups of young people are more likely to respond to the survey than others. Young people with lower attainment are least likely to respond to surveys, and thus are likely to be under-represented in the data, and males are less likely to respond than females (Lynn et al 1994; Howieson et al 2008). Not only does low response introduce bias into the results, but this bias may change as attrition increases, thus reducing comparability across surveys.
- 2.8 In an attempt to compensate for non-response bias in the results, weighting variables were constructed by the administrators of each survey from known characteristics of the sample and population. The purpose of weighting is to make the characteristics of the “achieved sample” of respondents more like the characteristics of the “target sample”. The effects of weighting the 2002 SSLS cohort are demonstrated by Table 2.3 which compares the distributions of un-weighted and weighted samples by sex and Standard grade attainment. The first row of Table 2.3 refers to young males who did not achieve any awards at Standard Grade. In the un-weighted sample, there were just 48 respondents in this category. However, each of these cases was allocated a relatively high weighting in the data – an average weight of 1.97 – which meant that each was counted as (almost) two cases in the analysis – and almost doubling the total numbers in this category to 94.7cases. Thus, while there are 2.1% of male respondents with no awards in the un-weighted sample, this percentage increased to 3.7% in the weighted analysis.

- 2.9 The opposite effect is shown by row 6 of Table 2.3, which refers to high-attaining males who achieved five or more awards at credit level. Although there were 1043 male respondents in this category in the un-weighted sample, they were each allocated a relatively low weighting – an average weight of 0.82 - which means that the total number of cases in this category is reduced to 854.2. Thus, while there are 46.3% of male respondents with 5+ credit awards in the un-weighted sample, this percentage is reduced to 33.2% in the weighted analysis.
- 2.10 The final column of Table 2.3 shows the extent to which each category was adjusted to compensate for low response rates. The highest weights were allocated to low-attaining young men who had the lowest response rates. The lowest weights were allocated to high attaining young women who had the highest response rates.

Table 2.3: Comparison of un-weighted and weighted sample of the 2002 SSLS cohort by sex and Standard Grade attainment

	Number of cases		%		Mean
	Unweighted	Weighted	Unweighted	Weighted	Weight
Males					
No awards	48	94.7	2.1	3.7	1.97
1+ awards at 5-7	29	54.7	1.3	2.1	1.88
2+ awards at 3-4	396	699.3	17.6	27.2	1.77
1-2 awards at 1-2	377	511.5	16.7	19.9	1.36
3-4 awards at 1-2	325	320.5	14.4	12.4	0.99
5+ awards at 1-2	1043	854.2	46.3	33.2	0.82
missing	37	40.7	1.6	1.6	1.10
Total	2255	2575.5	100.0	100.0	1.14
Females					
No awards	38	54.7	1.3	2.2	1.44
1+ awards at 5-7	28	40.1	1.0	1.6	1.43
2+ awards at 3-4	410	594.3	14.5	23.7	1.45
1-2 awards at 1-2	447	486.2	15.8	19.3	1.09
3-4 awards at 1-2	367	298.9	13.0	11.9	0.81
5+ awards at 1-2	1490	988.5	52.6	39.3	0.66
missing	53	49.7	1.9	2.0	0.94
Total	2833	2512.5	100.0	100.0	0.89

- 2.11 Social class is an important variable for analyses in this report, and Table 2.4 provides some information about how the distribution of social class is affected by weighting. The categories with the highest weighting were males whose parents were in working class (1.33) or unclassified (1.49) occupations – suggesting that response to the survey by these groups was relatively low. The lowest weights (0.76) were allocated to females with parents in managerial and professional occupations, who were most likely to respond to the survey. From Table 2.4 there appears to be a slight difference in the percentage social class distributions of males and females in the SSLS 2002 sample – 38.9% of males were managerial/professional compared with 36.1% of females. We have no reason to expect these differences in the population of school pupils, and they may have arisen from variations in the quality of answers to the survey or coding of these responses (see below). There is

also a possibility that these small differences may be influenced by unmeasurable differences in response and weighting, but there is no information about the social class characteristics of the target sample for comparison..

Table 2.4: Comparison of un-weighted and weighted sample of the 2002 SSLS cohort by sex and social class

	Number of cases		%		Mean
	Unweighted	Weighted	Unweighted	Weighted	Weight
Males					
Managerial/professional	1010	988.6	45.1	38.9	0.98
Intermediate	640	749.2	28.6	29.5	1.17
Working class	433	574.6	19.3	22.6	1.33
Unclassified	155	231.1	6.9	9.1	1.49
Total	2238	2543.5	100	100	1.14
Females					
Managerial/professional	1193	901.5	42.3	36.1	0.76
Intermediate	808	714.5	28.6	28.6	0.88
Working class	604	611.1	21.4	24.5	1.01
Unclassified	217	267.2	7.7	10.7	1.23
Total	2822	2494.3	100	100	0.88

- 2.12 Weighting systems can have considerable effects on the results of analyses, as shown by the percentage distributions in Table 2.3 and 2.4, and the validity of analyses based on weighted data are dependent on appropriate data and methods being used to calculate weighting.
- 2.13 For the 1984-1990 SSLS cohorts the weighting calculations compared numbers of respondents in the achieved sample by sex, attainment and stage of leaving school with numbers in the S4 school population. Similar² weighting systems were calculated for all cohorts by the survey organisation responsible for each survey. However, although weighting can take account of known characteristics such as sex, attainment and region, it cannot fully correct for low response that is associated with unknown characteristics such as feelings of alienation from the education system. Potential bias must be borne in mind when interpreting the findings.
- 2.14 In this report, findings displayed in tables and charts are based on weighted data – using the weighting systems developed for each survey. Statistical models are based on un-weighted data, so that standard errors are not skewed by the weighting systems – in the statistical models the effects of non-response are mitigated by including relevant characteristics of respondents as terms in the model.

Constructing the time series datasets

² We assume that similar methods were used to create weighting for subsequent surveys but have no documentation of the methodology.

- 2.15 The aim in constructing the time-series dataset from SSLS was to derive a set of variables for each cohort that is comparable over time. However, the task was not straightforward because of changes in survey design and question wording (See Croxford et al 2007). For example, questions were asked in different ways, or used different response categories. For some variables there are gaps in the time series because questions were asked in some survey years and not others, or coding of responses was inconsistent over time.
- 2.16 There were also major problems with the design of particular surveys. In particular, the design of the 1992 cohort is so problematic that the data have to be omitted from most analyses. In 1992 the SSLS was redesigned as an annual survey of school leavers (who might leave from S4, S5 or S6), instead of a cohort. The 1992 S4 cohort was then “reconstructed” by taking S4 leavers from the 1993 SSLS, S5 leavers from the 1994 SSLS and S6 leavers from the 1995 SSLS. The S5 winter leavers were not included. This design was so problematic that in 1996 the SSLS was again redesigned as a cohort survey. However, there were also errors in the design of the first survey sweep of the 1996 cohort: the sample was divided between “leavers” and “stayers” on the basis of whether schools expected them to leave school at the end of S4 or stay on for S5 – questions about destinations were not asked of those included in the “stayers” sample, and consequently this information is missing for approximately 20% of the cohort (mostly “winter leavers”).

Qualifications

- 2.17 A further change in survey design from 1992 onwards was in the way that data on courses, attainment and qualifications were derived. Surveys of cohorts 1984-1990 included detailed questions about curriculum and examinations taken at school. From 1992 onwards these detailed questions were omitted, and variables summarising attainment were derived by the Scottish Examination Board (and later the Scottish Qualifications Authority (SQA)) and linked to the survey data. This linkage became easier when a unique Scottish Candidate Number was assigned to Scottish students in the mid 1990s, but data are missing for some respondents in cohorts 1992-1998. The focus on national qualifications achieved also reduced the survey information on curriculum, and provides no information on non-SQA qualifications from 1992 onwards.
- 2.18 Changes over time in the Scottish qualification system have posed considerable challenges for constructing the time series. Our aim was to develop derived variables for the time-series that are relevant to historical data as well the current situation. Our approach has been to make some assumptions about equivalences based on advice from SQA. For example, the Ordinary Grade of the Scottish Certificate of Education (SCE) was the main qualification at the time the 1984 cohort were in S4, but this was gradually replaced by Standard Grade. For the purpose of constructing time-series variables we assume that each grade awarded at Ordinary Grade is equivalent to the same grade at Standard Grade (Table 2.5). Variables

constructed by this means include the total number of awards at the equivalent of Standard Grade credit, general or foundation, and also an overall point score.

Table 2.5: Equivalence of qualifications at age 16

SCE Standard Grade	SCE Ordinary Grade	GCSE	Award at A-C	Point score	SCQF level
1	A	A, A*	yes	7	5
2	B	B	yes	6	5
3	C	C	yes	5	4
4	D	D		4	4
5	E	E		3	3
6		F		2	3
7		G		1	

- 2.19 Similarly, the task of extending the time series to include the 2002 cohort had to take account of changes in curriculum and assessment arising from the Higher Still reform, and removal of age/stage restrictions on entry to National Qualifications (NQ). For post-16 qualifications we have assumed equivalences based on the UCAS tariff and Scottish Credit and Qualifications Framework (SCQF). For example, we have assumed that the old Certificate of Sixth Year Studies and A-levels are equivalent to Advanced Higher (Table 2.6). We further assume that a pass at Intermediate 2 is equivalent to a credit level award at Standard Grade and a pass at Intermediate 1 is equivalent to a general level award. Variables constructed by this means include the total number of awards at the equivalent Higher or Advanced Higher, a UCAS tariff score and the highest SCQF level achieved.

Table 2.6: Equivalence of post-16 qualifications

UCAS Tariff	A-level (SCQF Level 7)	CSYS/Adv Higher (SCQF Level 7)	Higher (SCQF Level 6)	Int 2 (SCQF Level 5)
120	A	A		
100	B	B		
80	C	C		
72			A	
60	D		B	
50				
48			C	
42				A
40	E			
38				
35				B
30				
28				C
20				

Social Class

- 2.20 Measures of socio-economic status are derived from information provided by respondents to the surveys about their parents' occupations. These responses may not be accurate, as in some cases young people do not know what their parents do for a living, and the majority cannot fully

describe their parents' occupations in the detail required for accurate socio-economic classification.

- 2.21 Each of the SSLS includes detailed coding of parents' occupations using the Standard Occupational Classification (SOC) for government statistics pertaining at the time of the survey. However, there have been three different SOC classifications in the course of the time series. In addition, the key social class classification has been changed from the Registrar General's classification to the National Statistics socio-economic classification (NS-SEC) (Rose and O'Reilly 1998). For the EYT project we developed a method of deriving the NS-SEC classification from the historic SOC codes in order to derive comparable measures of social class over time (Croxford 2005). The trends in parental SEC – based on the higher of mother's or father's occupational SEC - are shown in Table 2.7. The table shows a steadily increasing proportion of parents in managerial and professional occupations, and corresponding decline in the proportion in working class occupations.

Table 2.7: Socio-economic classification of occupations of parents of SSLS samples (weighted)

	SSLS Cohort (defined by year completed S4)							
	1984	1986	1988	1990	1992	1996	1998	2002
All managerial & professional	23	27	30	32	33	34	36	38
• Higher managerial	3	4	5	6	5	5	5	5
• Professional	4	5	6	7	9	8	9	9
• Lower managerial and professional	15	17	19	20	19	21	21	23
All intermediate	29	30	30	29	29	27	28	29
• Intermediate	13	12	12	13	14	13	14	13
• Small employers and own account	16	18	17	15	15	14	13	16
All working class	37	33	30	31	25	25	24	24
• Lower supervisory and technical	9	8	7	8	7	7	6	5
• Semi-routine	14	12	11	14	11	11	11	13
• Routine	14	12	12	9	8	7	6	5
Unclassified	12	11	10	8	13	14	13	10
<i>Unweighted N (=100%)</i>	<i>6505</i>	<i>6361</i>	<i>5534</i>	<i>4421</i>	<i>3432</i>	<i>4301</i>	<i>7567</i>	<i>5038</i>

Comparison of parental social class with census data

- 2.22 In an attempt to validate these trends, we compared the social class distributions of parents occupations from the cohort surveys with published data from the census. This comparison was made after omitting "unclassified" cases, because this category has different meanings in the census compared with the surveys. However, we cannot expect the social class distributions to be the same in the cohort surveys as in the census because the likelihood of being the parent of a respondent to the cohort surveys is greater in the middle age-groups and lower socio-economic groups.

- 2.23 For Scotland, published data from the census compares the NS-SEC categories of the occupations of all people aged 16-74 in 1991 and 2001 (GROS 2003, Table 16). These data are summarised in Table 2.8, columns 1991a and 2001a. However, the parents of the young people who responded to the Scottish youth cohort surveys are more likely to be in the age-group 30-59, so social class data for this age group were extracted from the detailed 2001 census tables, and are summarised in Table 2.8 columns 2001b. Social class of occupation of mothers and fathers of the SSLS cohorts 1990 and 2002 are summarised in Table 2.8 columns 1990c and 2002c.

Table 2.8: Scotland only: Comparison of social class distributions from Census 1991 and 2001 with Scottish School Leavers Surveys

Census data	Males			Females		
	1991a	2001a	2001b	1991a	2001a	2001b
Managerial & Professional	30	38	39	25	37	36
Intermediate	20	19	19	32	27	25
Working	50	44	42	43	37	39

SSLS	Father		Mother	
	1990c	2002c	1990c	2002c
Managerial & Professional	30	32	21	30
Intermediate	22	33	28	29
Working	47	35	52	42

Notes

- a) All aged 16+ in employment
- b) All aged 30-59
- c) Parents of all ages

- 2.24 The social class distribution of fathers in the 1990 cohort is very similar to the census distribution for 1991. The subsequent increase in the percentage of fathers in managerial and professional occupations by the 2002 cohort is in the same direction, but a little lower, than that shown by the 2001 census. The downward trend in the proportion of fathers in working class occupations between the 1990 and 2002 cohorts is steeper than the corresponding trends shown by the census.
- 2.25 Mothers in both 1990 and 2002 cohorts were less likely to be in managerial and professional occupations than is the case for women in the census. However, these differences can probably be explained by the fact that women from managerial and professional backgrounds are less likely to have children than women from other social classes, and therefore less likely to have children included in a survey of school leavers.
- 2.26 We conclude that the distribution of social classes in the SSLS is not exactly the same as the distribution in the census, but differences are not very extreme, and may to some extent be explained by social class differences in age-related birth rates and their consequent effect on the sample of school-age children. However, we must be cautious in interpreting findings based on survey data.

2.27 Some questions about family background have been asked consistently of all SSLS cohorts. For example, the SSLS have consistently asked detailed questions about parents' main activity (full-time job, part-time job, unemployed, retired, doing full-time unpaid work in the home, other) which provided valuable information about socio-economic characteristics. Other questions, have been asked in slightly different ways in each survey, so that it is more difficult to construct comparable variables. For example, all SSLS from 1984 to 1998 cohorts included the question: *How old were your mother and father when they left school?* This provided a consistent measure of the proportion of parents who had experienced post-compulsory education, so that we could analyse trends over time, including the effects of parents' education on the educational experiences of their children. However the question asked of the 2002 cohort has been changed to: *Did your parents (or step parents) get one or more Highers (or equivalent)?* Thus, we no longer have a consistent time-series for parental education.

Distribution of SSLS samples

2.28 The SSLS aims to present a nationally-representative picture of the experiences of young people in Scotland, and the sample includes all schools except special schools. The majority of young people included in the SSLS samples attended schools in urban areas (Figure 2.1). The vast majority (95%) attended state-funded comprehensive schools with most of them attending non-denominational schools (Figure 2.2). These characteristics did not change over the period of this study, so Figures 2.1 and 2.2 show the distribution aggregated across the whole time series.

Figure 2.1: Urban-rural distribution of SSLS samples

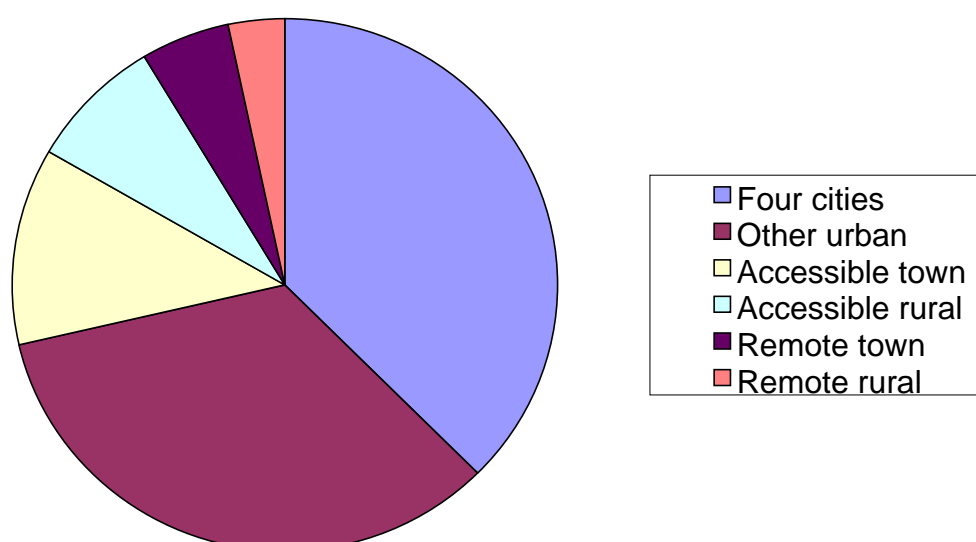
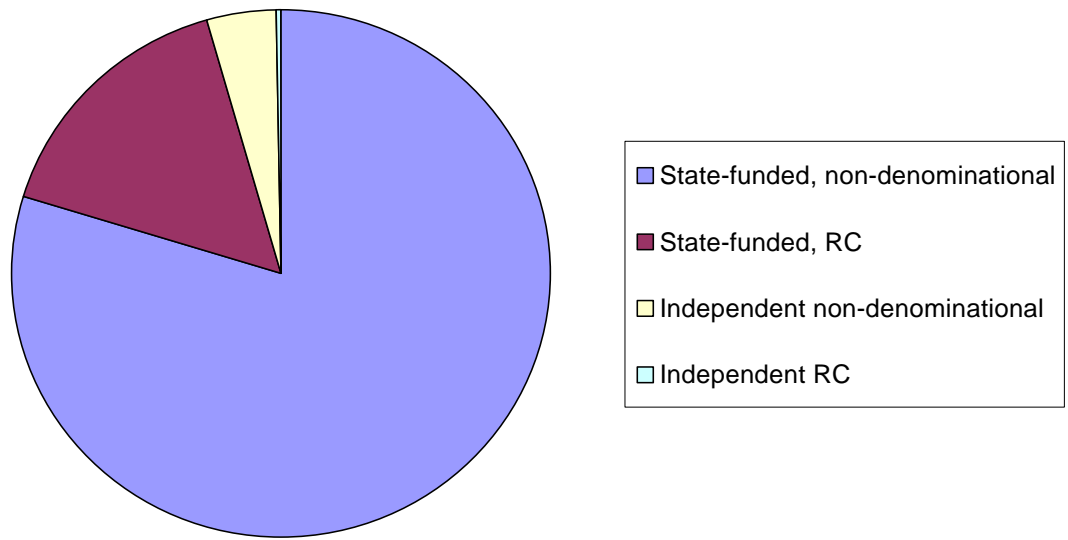


Figure 2.2: Types of school attended by SSLS samples



3 THE CHANGING CONTEXT OF SECONDARY SCHOOLING

- 3.1 This section provides a brief reminder of the social, economic, demographic and policy changes that occurred in the period 1985-2005. It does not attempt to describe these changes in detail, but merely to suggest some implications for the context of secondary education. Brief reference is given to reports where further information, including references to relevant literature, can be found, including the series of SSLS special studies³ commissioned by the Scottish Government.
- 3.2 Changes in context summarised here include changes in:
- the structure of the labour market
 - perceptions of the role of women
 - demography
 - curriculum and assessment
 - other policies affecting secondary education and youth transitions.

Labour market changes

- 3.3 The past two decades continued a period of economic change - especially changes in the industrial structure of Scotland, with the decline in coal-mining, iron and steel, and manufacturing industries. Industrial change led to changes in patterns of employment, especially evident in the decreasing proportion of workers in manual employment and increasing proportion of the work force engaged in “white collar” jobs, and in the financial and service sectors. A full account of these changes and their consequences for Scotland can be found in “Living in Scotland” by Paterson, Bechofer and McCrone (2004). The focus of this report is the implications of these changes for young people surveyed by SSLS, including changes to family background. For example, data on parental occupation from the SSLS (Table 2.7 in section 2) show a steadily increasing proportion of parents in managerial and professional occupations, and corresponding decline in the proportion in working class occupations.
- 3.4 Industrial and occupational changes have important implications for young people’s future expectations. In previous decades the majority of young people expected to leave school and enter the labour market at age 15 or 16. However, in the early 1980s the demand for minimum-age low-qualified school leavers fell sharply, youth unemployment rose, and in response the government created a series of youth training programmes. Subsequently, there have been radical changes in the youth labour market coupled with increasing participation in post-16 education (Howieson 2003). Figure 3.1⁴

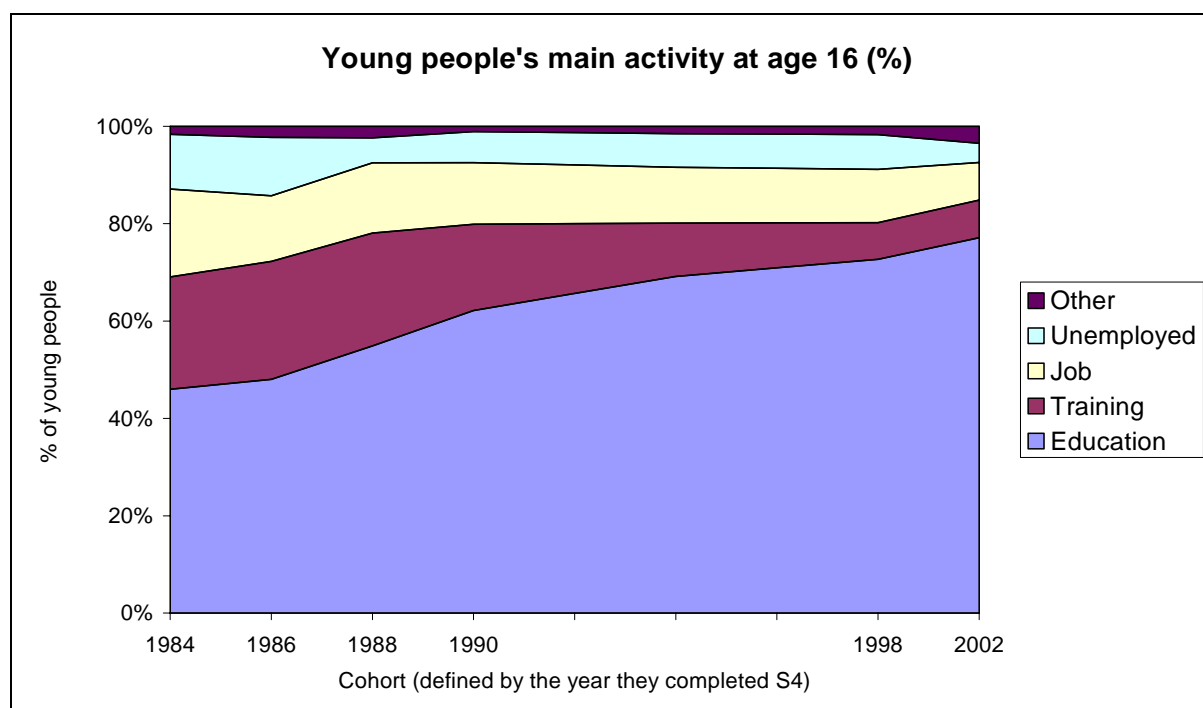
³ SSLS Special Studies were commissioned by the Scottish Government and covered: Scottish School Leavers Entering Higher Education (Tinklin and Raffe 1999); High-Achieving Females (Tinklin 1999); Gender and Low-Achievement (Biggart 2000); The Destinations of Early Leavers (Howieson et al 2003); Young People Not in Education, Employment or Training (NEET) (Raffe 2003b); Participation in Science, Engineering and Technology at School and in Higher Education (Croxford 2003); The Effects of Low Attainment on Young People’s Outcomes at 22-23 (Howieson and Iannelli 2008).

⁴ There were design problems in the SSLS between 1992 and 1996, creating gaps in the data points.

shows that the proportion of young people who left education at age 16 fell from 54% in 1984 to 23% in 2002.

- 3.5 As educational qualifications have become important to more and more young people an increasing proportion of young people expect to continue their education beyond the age of 16. Young people with low levels of attainment at age 16 have very poor prospects in the labour market (Biggart 2000, Howieson 2003).

Figure 3.1



Changing perceptions of the role of women

- 3.6 During the 1980s and 1990s there have been increasing opportunities for women in education and the labour market as a result of growing demand for female labour, especially in the service sector. Some barriers to women's careers were reduced by the 1975 Sex Discrimination Act. Similarly, some gender barriers have been reduced within schools, including more equal access to some areas of the curriculum (Croxford *et al* 2003). The effects of these changes include increasing rates of employment and educational participation by women
- 3.7 One noticeable change in the current study is the economic activity of the mothers of young people in the SSLS survey. Figure 3.2 shows that the proportion of young people whose mother was occupied full-time unpaid in the home decreased from 25% in 1984 to 12% in 2002, while the proportion in full-time employment increased over the same period from 30% to 51%. These trends have important implications for pupils, including increasing awareness of the demands of the labour market and increasing the aspirations of female students.

- 3.8 The social status of mothers' occupations have also increased over time, as illustrated by Figure 3.3. The proportion of mothers in occupations classified as managerial or professional rose from 8% in 1984 to 23% in 2002, while if intermediate occupations are included, the proportion in managerial, professional or intermediate occupations rose from 27% to 45% over the same period.

Figure 3.2

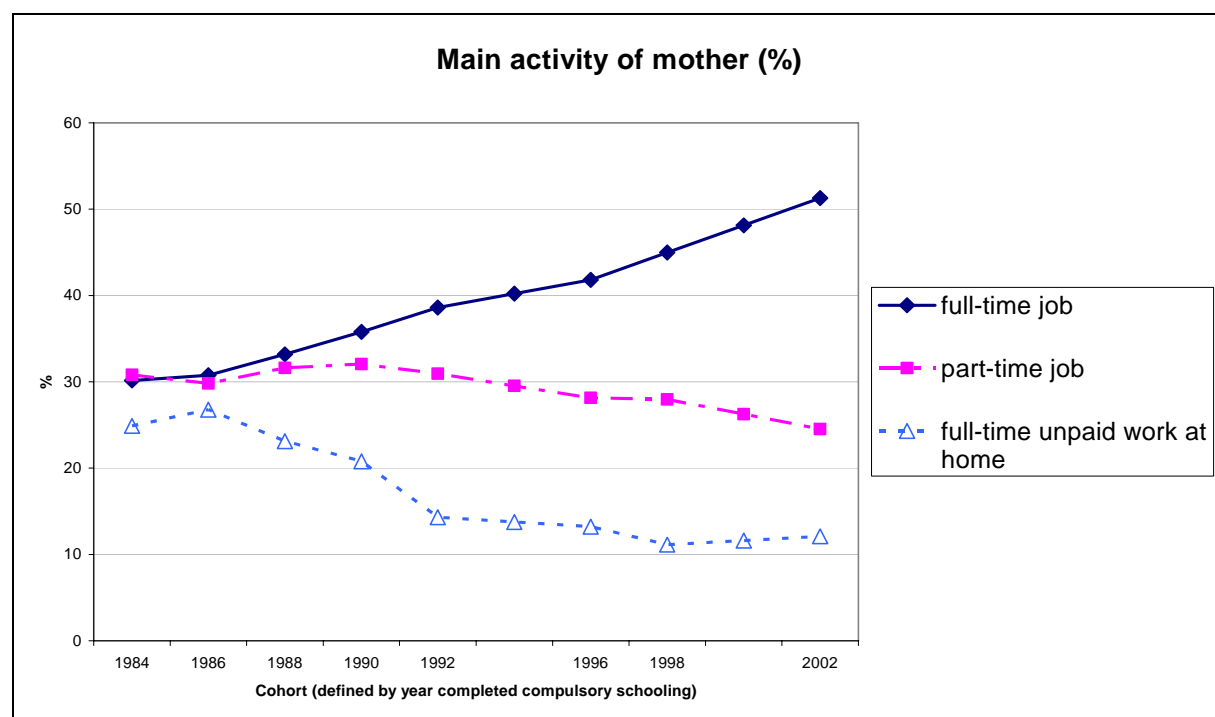
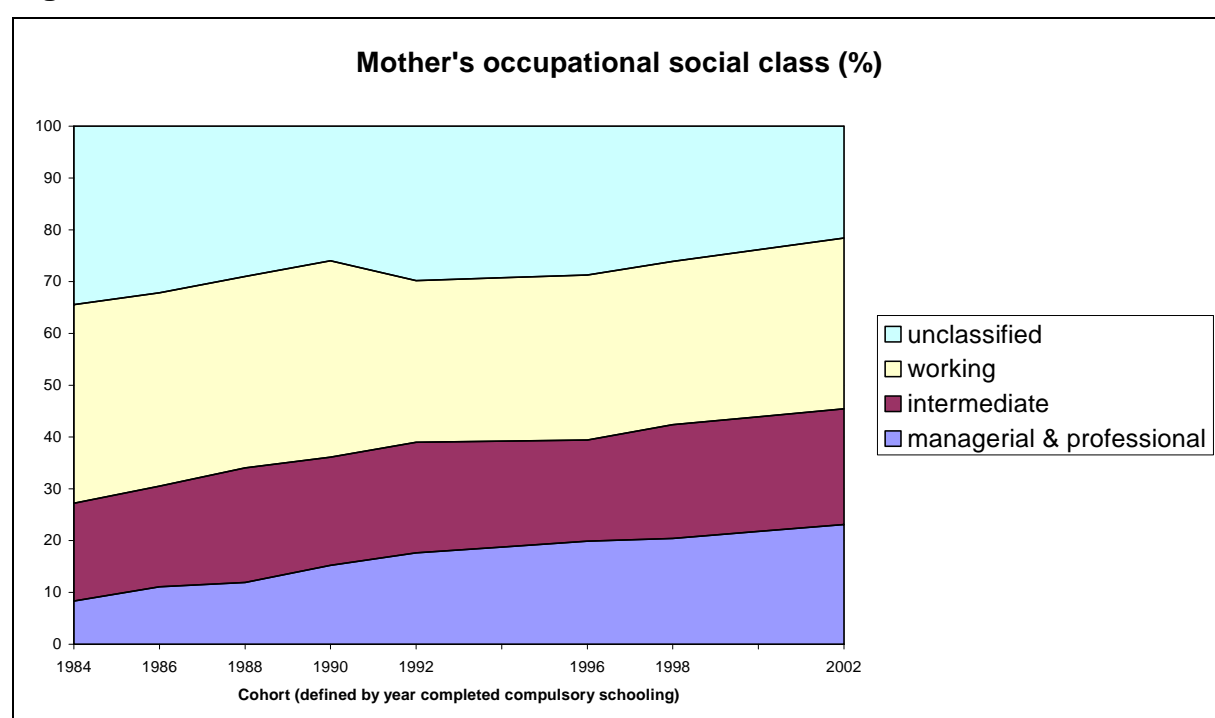


Figure 3.3



- 3.9 These changes in participation and status of mothers' paid work may have implications for pupils' perceptions of gender roles and the career aspirations of young women. In 2000, a study of gender and pupil performance commissioned by the Scottish Government (Tinklin *et al* 2001, 2005) found that:

"in general the young people believed that it was equally important for males and females to get good qualifications at school, to have worthwhile careers and that childcare should be a joint responsibility. They also believed that males and females could do anything they wanted to these days. Their views were tempered, however, by the inequalities they saw around them in the workplace and in their own families".

- 3.10 The study concluded that
"while great strides have been made in changing attitudes towards gender equality, there is still a long way to go before equal opportunities are really achieved" (Tinklin *et al* 2005).

Demographic change

- 3.11 The two decades covered by this research were also a period of demographic change, with the numbers of 16-year olds in the population falling to a low-point in 1993. In Scotland the decline in the numbers of 16-year olds was steeper and more sustained than elsewhere in Britain, and by 1998 the numbers were just 71% of the 1984 level.
- 3.12 Linked to these have been changes in the family background characteristics of pupils. For example, the average size of families has become smaller, so that whereas young people in the 1984 cohort had 2.2 siblings on average, this had declined to 1.4 siblings by 2002. There is also an increasing proportion of lone-parent or step-parent families so that the proportion of young people living with both of their own parents declined from 79% of the 1984 cohort to 70% in 2002. The EYT research found that pupils with lone parents or step parents have lower attainment, on average, than their peers (Croxford 2007).

Changes in curriculum and assessment

- 3.13 Over the 1980s and 1990s there have been major changes in curriculum and assessment. Reforms of courses and qualifications for the 14-16 age group were initiated in the early 1980s by the Munn and Dunning enquiries. The Munn report (Scottish Education Department (SED) 1977a) led to the introduction of a common curriculum framework in Scotland from 1983, which to some extent created a curriculum entitlement that reduced inequalities by gender and social class (Croxford 1994). The Dunning report – "Assessment for All" (SED 1977b) - led to the development of Standard Grade examinations in order to provide appropriate awards for pupils of all levels of attainment. The systems of examination in place at the beginning of the 1980s had been designed to cater for the top third of the ability range, and

were not appropriate for all students - the division of students between “certificate” and “non-certificate” classes had negative effects on pupils’ motivation (Gow and McPherson 1980). The introduction of Standard Grade in 1986 provided a system of certification for a much wider range of abilities, and thus provided greater motivation for students (Gamoran 1996).

- 3.14 There have been a number of attempts to make the curriculum more vocationally relevant. In the early 1980s, the Technical and Vocational Education Initiative (TVEI) aimed to make what was taught in schools more relevant to the world of work. However, much of the impetus was lost when the specific funding programme came to an end, and the Scottish curriculum continues to be very academic (Raffe et al 2001). New types of vocational qualifications were introduced (and modified) in the 1980s and 90s in response to the perceived need to raise skill levels in Britain, to improve its economic competitiveness and to provide appropriate opportunities for the increasing proportion of the cohort staying on in full-time education. In Scotland, National Certificate modules covering both general and vocational learning were introduced in 1986 for use in school, college and the work place. National Certificate modules blurred the boundaries between academic and vocational education and helped to prevent the development of a distinct broad vocational track as in England. Overall, levels of participation in vocational qualifications tended to be lower in Scotland than in England. However, in all three systems vocational qualifications have tended to be regarded with lower esteem than academic qualifications (Raffe *et al* 2001), and to be less well understood by respondents to youth cohort surveys.
- 3.15 At the end of the 1990s the Higher Still reforms attempted to create a unified system of academic and vocational qualifications that would provide “Opportunity for All” (Scottish Office 1994, Howieson *et al* 1997). National Qualifications (NQ) were developed at a number of levels - Access, Intermediate, Higher and Advanced Higher – in order to provide appropriate courses and qualifications for all levels of ability. However, recent research shows that improved opportunities for access have not translated into improved attainment for mid and low attainers despite the logic of the Higher Still framework (Raffe, Howieson and Tinklin 2005, 2007).
- 3.16 Until very recently the level of course studied was strongly related to age and stage. Almost all school pupils studied two-year Standard Grade courses in S3 and S4, so that their level of attainment at the end of compulsory schooling could be certificated. However, greater flexibility was introduced in 2003, so that some pupils could be fast-tracked to complete Standard Grade courses in some subjects in S3, while Standard Grade courses in S3-S4 have been replaced by other NQ including Intermediate 1 and 2 in a small number of schools. Similarly, the curriculum has been made more flexible: the common core of the curriculum framework was reduced in the late 1990s in order to allow more scope for curricular choice, and more recently a Curriculum for Excellence intends to make the provision of courses and qualifications even more flexible with greater personalisation of the curriculum to individual student’s needs (Scottish Executive 2004).

Other changes in education policy

- 3.17 This report does not seek to review all the changes in government policies towards education that have occurred over the past two decades, but to mention two broad policy directions that affected the context of secondary schooling in the period to 2005.
- 3.18 The first is the introduction of market competition, performance management and quality assurance, with a focus on improving schools and raising attainment (Croxford and Cowie 2005).
- 3.19 An important aspect of marketisation in Scotland was the introduction of greater parental choice of school from the 1980s. The 1981 Education (Scotland) Act gave parents the statutory right to request that their child attend a school outside of their designated attendance areas. The Act required Education Authorities to take these requests into account, and restricted the circumstances in which local authorities could reject a request. To assist parents in their choice, the legislation also required Education Authorities to publish brochures for each school that reported examination results and other pertinent information. Research on the early effects of parental choice (Adler 1989, Echols et al 1990, Willms 1996) found that parents who exercised their right to choose a school other than their designated school were better educated and had higher levels of social class. Parents disproportionately chose schools that had pupils with higher levels of attainment and socio-economic status. Moreover, chosen schools tended to be older, formerly selective schools that had been founded by the turn of the century and still included “academy” in their name. However, as the reform took hold, choice became more common amongst parents from working class backgrounds, and middle class parents were more likely to opt out of the state system altogether and place their child in a private school. As in the early stages of the reform, parents disproportionately chose schools that served pupils with above-average levels of socio-economic status (Willms 1997).
- 3.20 One of the concerns about parental choice is that it contributes to the segregation of pupils with differing social class backgrounds into separate schools, thereby leading to a system similar to the selective system that operated prior to comprehensive reorganisation in 1965. Willms (1996) estimated the extent of segregation between schools of middle- and working-class pupils for the 54 Scottish communities that had at least two secondary schools. The analysis revealed that between-school segregation along social class lines increased substantially as the choice reform proceeded apace. The tendency was for middle class pupils to increasingly become isolated in a small number of schools within each community. Segregation increased in large and small communities alike, but the biggest increase was in the isolation of middle-class pupils in Scotland's five largest cities (Glasgow, Edinburgh, Paisley, Aberdeen and Dundee). Subsequent trends in segregation are explored further in section 4.
- 3.21 The focus of the current study ends in 2005 with the end-point of SSLS data, so that recent important policy developments including a Curriculum for

Excellence and More Choices More Chances (Scottish Executive 2004,2006) are beyond the scope of this analysis. We note however that there is increasing policy focus on mitigating the problems of young people with low levels of attainment at school, who leave school at the earliest opportunity and have limited opportunities in the labour market. Among the initiatives to address these problems are the introduction of Educational Maintenance Allowances to encourage young people from low-income households to stay on in full-time post-compulsory education. Evaluations of the pilot EMA programmes showed that the EMA has a positive effect on participation and attainment in national qualifications (Croxford et al 2002, 2005). Changes over time in participation are discussed in section 5.

Summary

- 3.22 The context of secondary schooling has changed substantially over the two decades covered by this study, as a result of:
- economic and industrial restructuring, and consequent changes in employment and training opportunities for young people;
 - increasing emphasis on educational credentials;
 - reduction of opportunities for low-attaining minimum-age school leavers and increase in proportion of students staying on to post-16 education;
 - increasing participation and status of women in the labour force;
 - developments in curriculum and assessment;
 - policies to encourage market competition, parental choice, performance management and quality assurance, with a focus on improving schools and raising attainment;
 - more recent policies to address the needs of young people with low attainment, and those not in education, employment or training. (For the most part these are beyond the timescale of the current study.)

4 SOCIAL SEGREGATION BETWEEN SCHOOLS

- 4.1 The comprehensive system of secondary schooling has been praised by international experts as one of the strengths of the education system in Scotland (OECD 2007). The underlying principles of the comprehensive system are described by Bryce and Humes (2008):

“It can be seen as an expression of social unity enabling the vast majority of youngsters to share a broadly similar education prior to entering the adult world It can also be regarded as a manifestation of the democratic will, endorsed at successive elections (pre- and post-devolution) in Scotland, surviving the attacks of the Thatcher years, and remaining potent under a nationalist administration. And it can be viewed as a statement of belief in equality of opportunity whereby all secondary pupils, regardless of class, gender or ethnic background, have a chance to develop knowledge and skills, and experience a sense of achievement” (op. cit. p 33).

- 4.2 If pupils of different social-class backgrounds are segregated into different schools, this undermines the central feature of the comprehensive system - that all secondary pupils should be educated together within the same school. Minimising social segregation between schools is therefore important for social unity, democracy and equality.
- 4.3 Social segregation affects the attainment (and consequent life chances) of pupils because the “school mix” and “social context” of each school, has a measurable impact on the attainment of all pupils attending the school. This “contextual effect” associated with the intake characteristics of each school has been demonstrated by a number of research studies in Scotland and worldwide (for example Croxford and Raffe 2007; McPherson and Willms 1987; Raudenbush and Willms 1995; Willms 1986; Willms and Raudenbush 1996). The contextual effect on attainment is further demonstrated in section 6 below. On average, pupils attending a school which has a large percentage of pupils from high social class backgrounds will have considerably higher attainment than pupils attending a school with a predominantly working class intake. This contextual effect is over and above any effect associated with the pupil’s own family background. Implicitly government departments adjust for school contextual effects by referencing performance indicators by average entitlement to free school meals, but this is a very crude and inadequate measure of school context (Croxford 2000).
- 4.4 The processes whereby the social class composition of a school affects individual students’ performance have been investigated by school effectiveness researchers since the 1960s. A study by Coleman *et al* (1966) suggested that contextual effects worked through the impact of peers on motivation, aspirations and attitudes to education. More recently ethnographic studies have focused explicitly on the mechanisms that underpin the effects of school composition, including school organisation and management, classroom instruction and reference group processes (Thrupp 1997, 1999; Thrupp *et al* 2003). Social segregation between schools – and

the consequent differences between schools in their social context – may therefore reinforce inequalities.

- 4.5 Social segregation between schools may be associated with residential segregation in towns and cities, for example where particular schools serve large areas of public housing, while others serve the more affluent areas; this is sometimes referred to as “selection by mortgage”. Recently there has been considerable debate as to whether the introduction of greater “choice” of schools may have led to greater social segregation. It has been argued that school choice has been exercised to a greater extent by the higher social classes than lower social classes, and that these choices favour schools with strong academic reputations and high average socio-economic status (SES) (Willms and Echols 1992, Gewirtz *et al* 1995, Noden 2000). Others have suggested that social segregation may in fact be declining, because the initial advantage of high social class families in exercising school choice was merely a “starting-gun” effect, and that subsequently lower social class families have used the opportunity for school choice to move their children away from the low achieving schools to which their location in housing schemes would otherwise constrain them (Gorard *et al* 1998, 2002).

Trends in social segregation between schools

- 4.6 Trends in social segregation between schools in Scotland in the period 1984 to 2002 were analysed using the methodology developed for the EYT project (Croxford and Paterson 2006). Some details are provided in Appendix 1.
- 4.7 The social class⁵ of pupils attending each school was used to create indices of social segregation for each SSLS cohort. Pupils in the first SSLS cohort entered secondary school in 1980 before the legislation that introduced parental choice. However, the segregation indices for subsequent cohorts do not show any significant upward trends, and we must conclude that parental choice did not make a major impact on social segregation in Scotland as a whole.
- 4.8 Over time there has been a fall in segregation in Scotland, and in 2002 segregation was lower than in 1988. This result may have been influenced by a number of additional factors including closure or merger of schools as the population has declined.
- 4.9 The analysis was carried out separately for a subset of schools in the four largest cities – Glasgow, Edinburgh, Dundee and Aberdeen. It shows that segregation in these cities is significantly higher than in Scotland as a whole. Segregation in the large cities has remained more or less the same for all cohorts, and has not been reduced over time. These findings suggest that in Scotland social segregation between schools is largely a problem of the big cities and predated the introduction of parental choice.

⁵ See section 2 for information about the derivation of social class and measurement problems.

- 4.10 The EYT project compared indices of segregation in England, Wales and Scotland. It concluded that differences between the three systems were small, but segregation was consistently lower in Scotland than in England, and this is compatible with the view that the more comprehensive system in Scotland is associated with lower segregation. In the 1990s, the trajectory of segregation in Scotland was different from that in England or Wales: it may have fallen slightly in Scotland but risen elsewhere. But gaps in the available data prevent a definitive conclusion. The segregation indices do not reveal clear upward or downward trends in the period since parental choice legislation was introduced (Croxford and Paterson 2006).

Summary

- 4.11 The problem of social segregation between schools arises where pupils from lower social class backgrounds are concentrated in particular schools to the extent that they are isolated from pupils of higher social class background, or vice versa. It undermines the comprehensive system of secondary schooling in Scotland, and reinforces social inequalities.
- 4.12 The pattern of trends over time does not show significant rise in segregation in the period following the introduction of parental choice. In fact segregation in the Scottish sample as a whole was significantly lower in 2002 than 1988.
- 4.13 Levels of segregation in a sub-sample of the four cities are significantly higher than in other parts of Scotland. Segregation between schools is largely a problem for the cities - it pre-dated parental choice legislation, and has not shown any decline in the period to 2002.

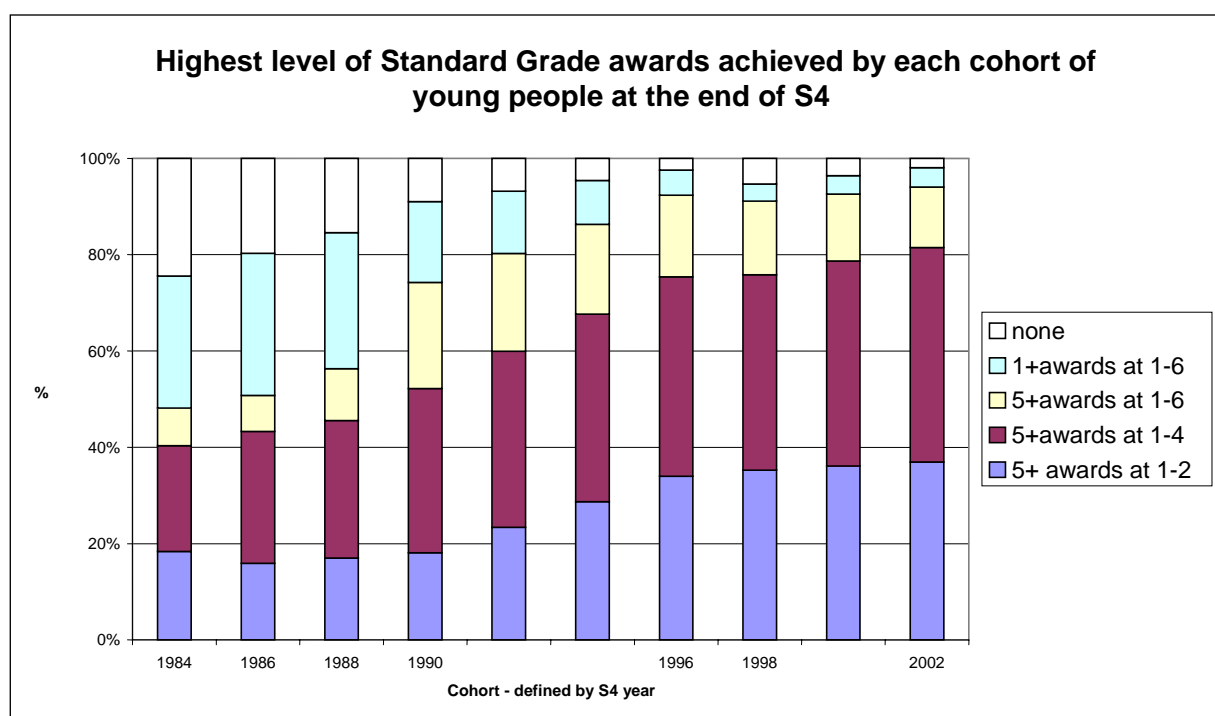
5 OVERALL TRENDS IN ATTAINMENT AND PARTICIPATION

5.1 This section summarises the overall trends in young people's attainment in national examinations,⁶ perceptions of school experiences, and their participation in post-compulsory education.

Attainment in national examinations at age 16

5.2 Attainment in national examinations at age 16 is a crucial outcome of compulsory schooling which affects young people's life chances (Howieson and Iannelli 2008). Figure 5.1 illustrates the rising levels of Ordinary/Standard grade attainment by young people at the end of S4. The area at the bottom of the chart represents the percentage of each cohort in the highest attainment category, who achieved five or more awards at Credit level. In 1984, just 18% of the first SSLS cohort achieved five or more awards at the equivalent of Credit level, but this proportion had more than doubled by the most recent cohort in 2002 (37%). Similarly, the proportion in the next band of attainment, who gained at least five awards at general/credit (but not 5+ credit) more than doubled from 22% in 1984 to 45% in 2002. On the other hand, the proportion of young people in the lowest two attainment categories, who achieved either no awards at A-F/1-6, or less than five awards at A-F/1-6, was 51% in 1984, but this proportion dropped to just 6% in 2002.

Figure 5.1



5.3 The increasing average attainment shown in Figure 5.1 provides evidence of the considerable success of the Scottish school system in improving

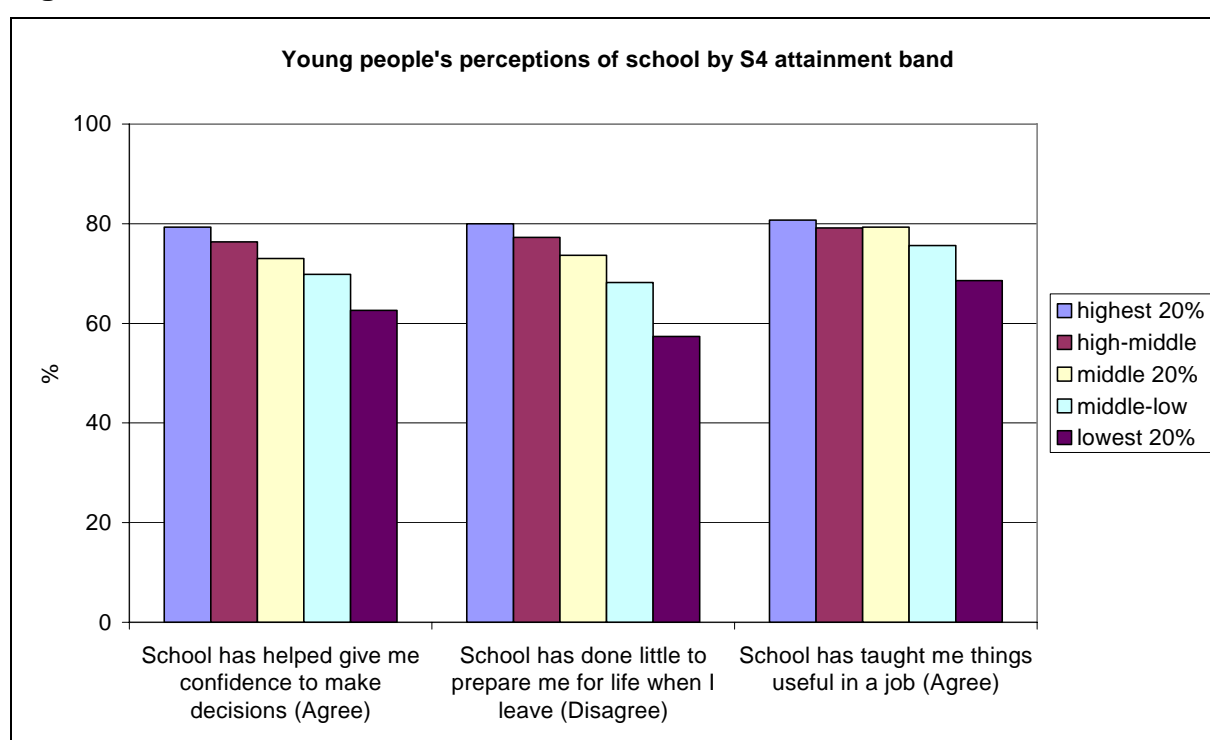
⁶ Measuring attainment over time is complicated by changes in the national qualification systems – see section 2.

performance levels over two decades. Clearly, pupils and their teachers have been making great efforts to achieve higher overall levels of Standard Grade attainment over time. However, there may be problems of “credential inflation”, as the more people achieve qualifications the less value they are perceived to have (Wolf 2002).

Perceptions of school at age 16

5.4 SSLS cohorts from 1992 onwards were asked questions about their perceptions of school, and on average they proved to be extremely positive (Figure 5.2). The majority agreed that “School has helped give me confidence to make decisions” and “School has taught me things that would be useful in a job”. The majority disagreed with the statement “School has done little to prepare me for life when I leave”. There is a slight tendency for young people with higher levels of S4 attainment⁷, to be a little more positive than those in lower attainment bands. However, it is clear that the majority of those young people in the lowest attainment band had a relatively positive perception of their compulsory school experience.

Figure 5.2



Participation in full-time education post-16

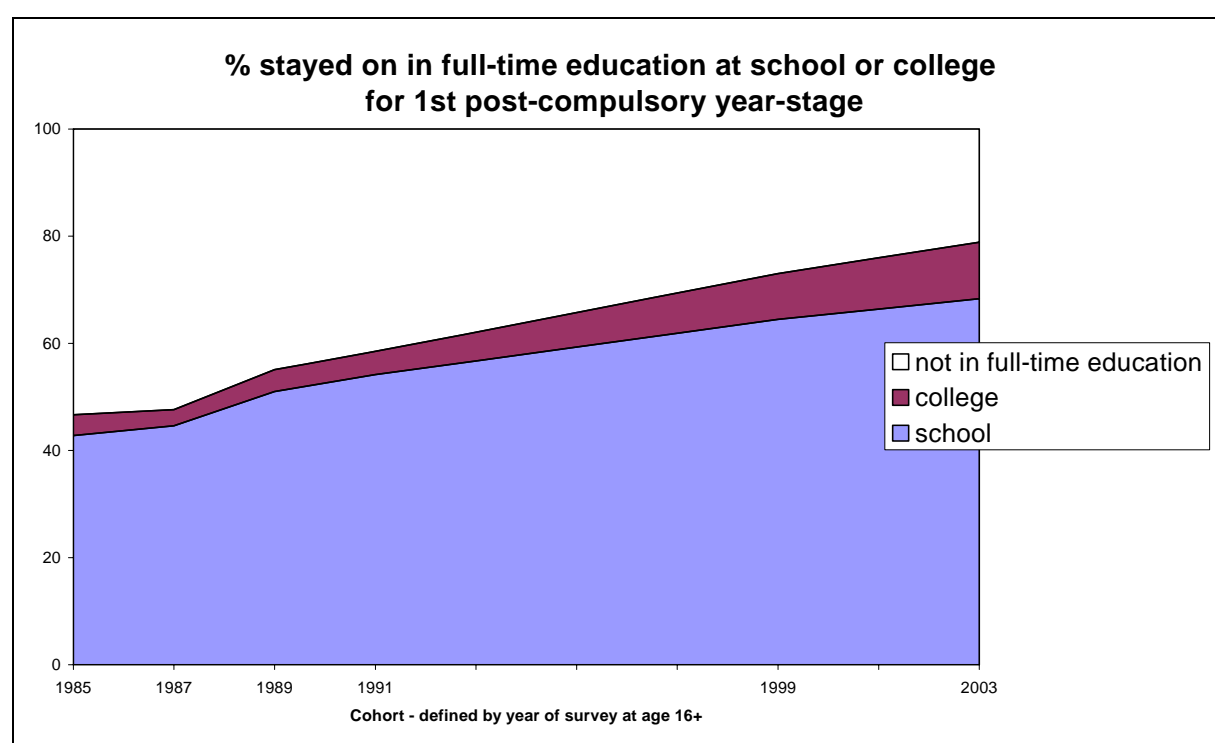
5.5 Over the two decades covered by this study, increasing proportions of young people stayed on in education after the age of 16. Raffe (2003b) notes that increasing participation is influenced partly by compositional factors, such as

⁷ The measure of attainment used here is derived from an overall attainment point score at age 16. Young people have been grouped into five attainment categories (quintiles) within each cohort. This takes away the effect of the fact that attainment has risen over time, and shows the relative effect of S4 attainment on each outcome.

increasing levels of parental education and social class. He suggests that other factors contributing to the growth include: reforms of compulsory schooling, which have encouraged more positive attitudes to school; changes in the labour market which have reduced opportunities for early leavers; and the structure of courses that reduce the risks associated with staying on (Raffe 2003b, p798). Increasing levels of participation are illustrated by changes in post-16 participation among young people surveyed by the SSLS (Figure 5.3). The first cohort of young people were surveyed in spring 1985, some 9-10 months after they completed fourth year (ie the S4 stage), and at that time less than half of the cohort were in full-time education. In contrast, over three-quarters of the most recent cohort were in full-time education in spring 2003.

- 5.6 The vast majority of young people who entered post-compulsory education chose to stay-on at school rather than moving to a college of further education. Figure 5.3 shows that in 1985 43% of young people stayed on at school, and this proportion increased to 68% by 2003. Over the same period the proportion of young people going to a college rose from 4% to 11%. For the most part, courses taken at school tend to be academic courses aiming for National Qualifications, whereas colleges provide a wider range of courses, including vocational courses.

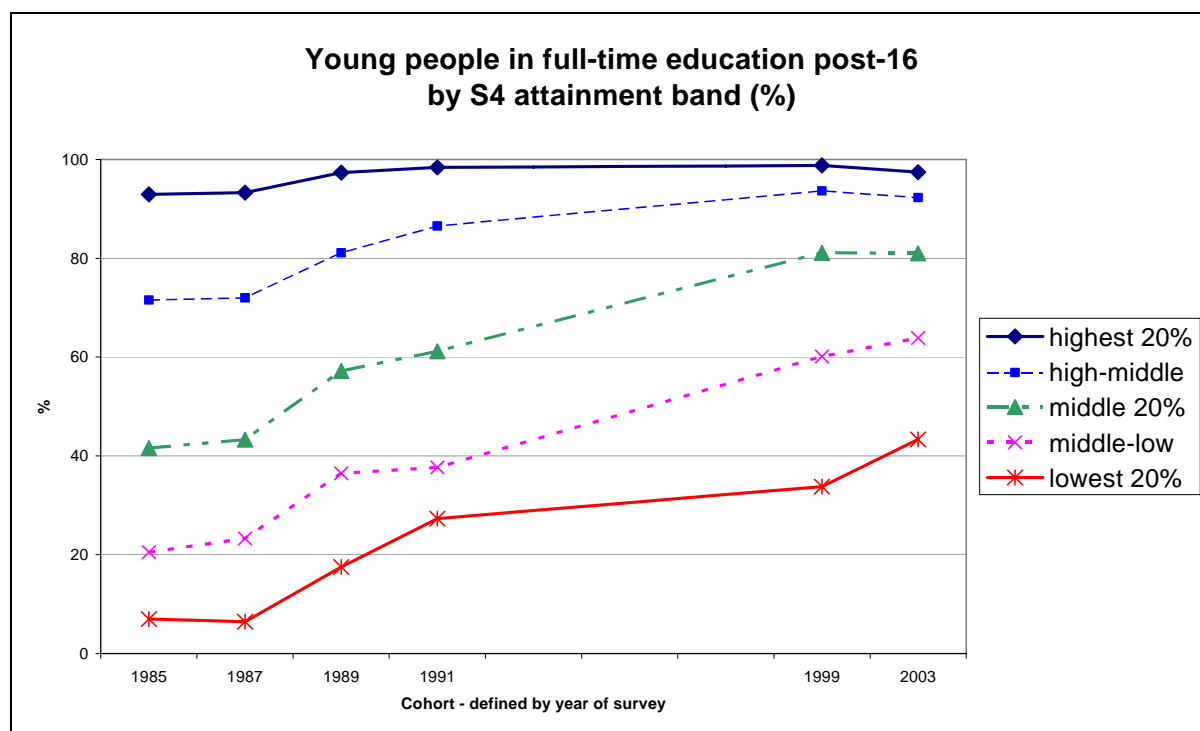
Figure 5.3



- 5.7 Levels of participation in post-16 education were strongly influenced by S4 attainment and this is illustrated by Figure 5.4. Throughout the period, almost all young people with the highest levels of Standard Grade attainment (in the top 20% of the attainment range of each cohort) stayed on for post-16 education. The main change is at the lower end of the attainment range.

While very few of those in the bottom 40% of the attainment range entered post-16 education in the 1980s, over time the increase in participation has been greatest among these lower attaining groups of young people. As a consequence, a far more diverse range of students have to be catered for in post-16 education now than in the 1980s and 90s.

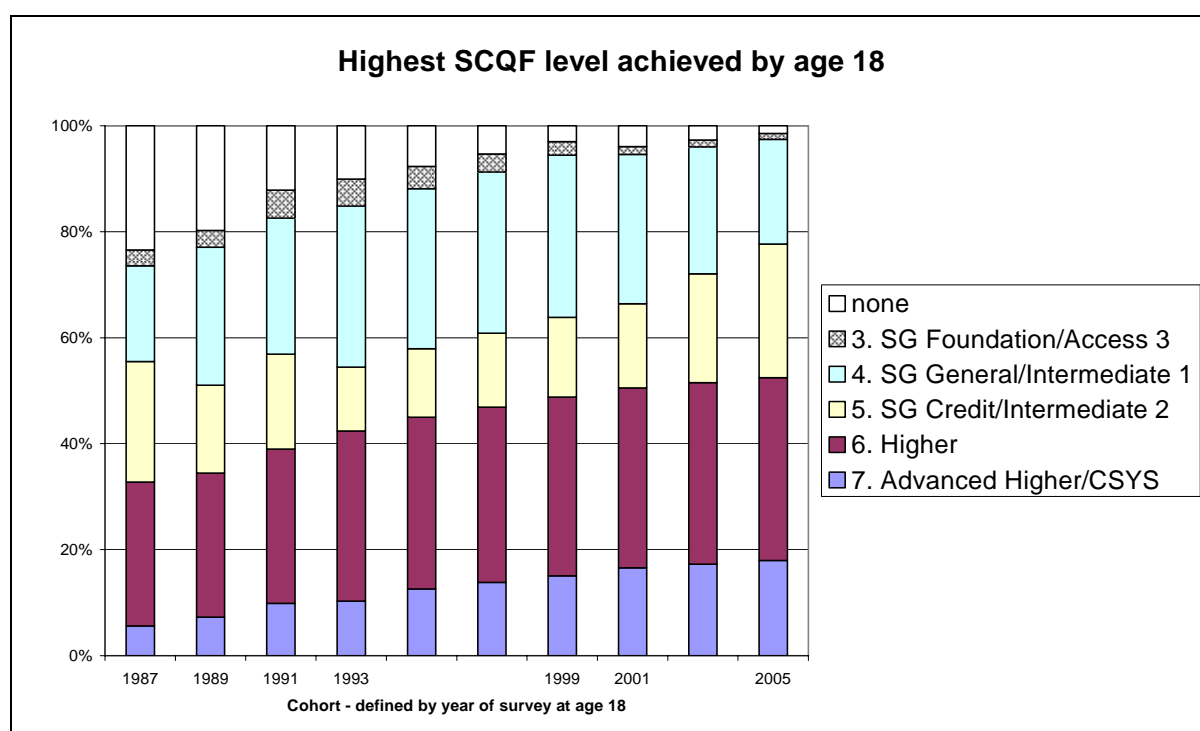
Figure 5.4



Attainment in national examinations at age 18

- 5.8 Provision of courses for the post-compulsory stages of education has changed considerably over the two decades of this study. In the early 1980s courses provided in the S5 and S6 stages at school were almost exclusively academic and focused on Highers courses for young people with high levels of attainment at age 16. However, as a more diverse range of young people were staying on for post-compulsory education, different levels of course became necessary. The *Higher Still* reforms led to the development of National Qualifications (NQ) at a number of levels - Access 1 to 3, Intermediate 1 and 2, Higher and Advanced Higher – in order to provide appropriate courses and qualifications for all levels of ability. Nevertheless, despite the logic of the Higher Still framework, recent research shows that improved opportunities for access have not translated into improved attainment for mid and low attainers: students with middle and low Standard Grade (SG) attainment had poorer average pass rates in NQs than those with high SG attainment (Raffe, Howieson and Tinklin 2005, 2007).

Figure 5.5



5.9 The Scottish Credit and Qualifications Framework (SCQF) provides a framework for comparing levels of attainment from different qualifications. The highest level of qualification achieved⁸ by each cohort up to the end of the S6 stage at school (or its college equivalent) is shown by Figure 5.5. Over time there has been a marked decrease in the proportion of young people with no qualifications and a slow but steady increase in the proportion of young people achieving SCQF levels 6 and 7.

Participation in education at age 18

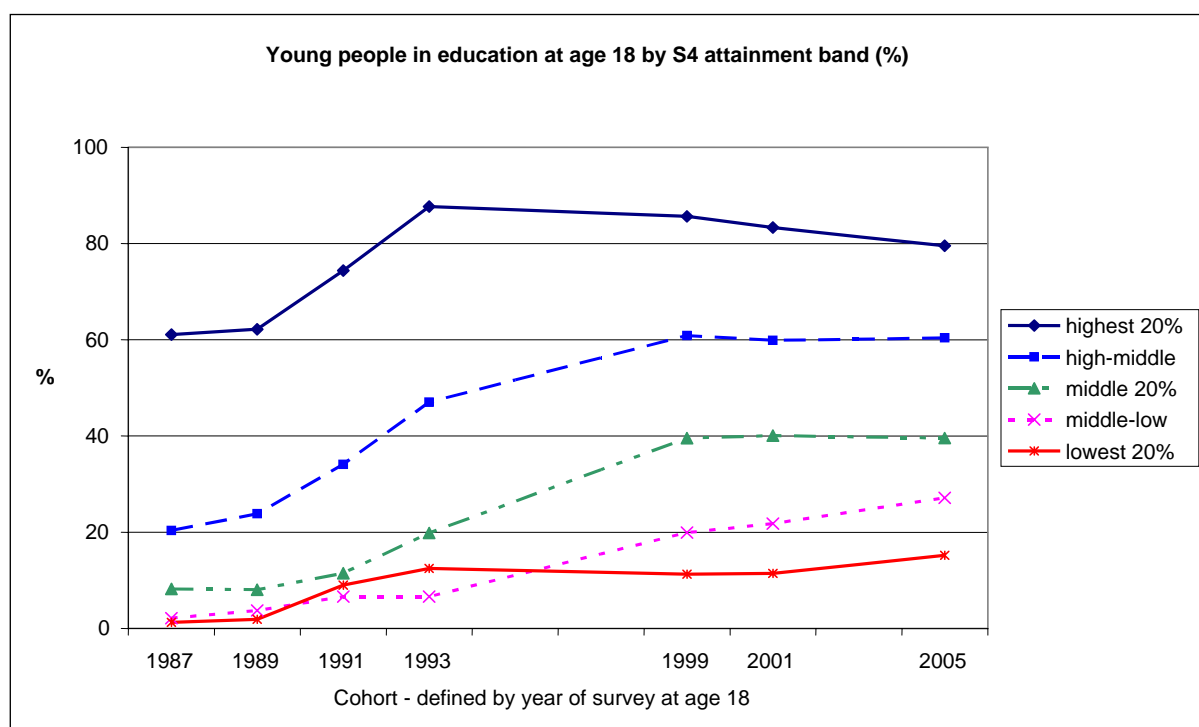
5.10 Over the two decades covered by this study, increasing proportions of young people have continued in education to age 18. The proportion of young people who stated that education was their main activity at the second time - point of the SSLS surveys (2.75 years after the end of compulsory schooling) increased from 19% in 1987 to 45% in 2005 (table not shown). The majority of those young people were in higher education (16% of the cohort in 1987 and 37% of the cohort in 2005).

5.11 Prior attainment is the main influence on participation in post-16 education and this is illustrated by Figure 5.6 based on S4 attainment bands. Throughout the period, the majority of young people with the highest levels of Standard Grade attainment (in the top 20% of the attainment range of each cohort) remained in education at age 18. In contrast, very few of those in the bottom 40% of the attainment range were in education. Raffe notes that *“Post compulsory education in Scotland appears to reflect the principle that further*

⁸ This measure assigns SCQF level on the basis of 1+ awards and does not take account of volume.

learning is for those who are best at it, rather than those who are most in need of it” (Raffe 2003, p297).

Figure 5.6



Summary

- 5.12 Over the two decades covered by this study there have been upward trends in:
- S4 attainment;
 - Post-16 participation in education;
 - Attainment in NQ at age 18;
 - Participation in education at age 18+.
- 5.13 These trends have been associated with increasing polarisation between those with high and low Standard grade attainment at age 16.
- 5.14 Perceptions of the compulsory school experience were very positive among all attainment bands, but were especially positive among high attainers.

6 INEQUALITIES BY GENDER, FAMILY BACKGROUND, SCHOOL CHARACTERISTICS AND LOCATION

- 6.1 Inequalities in Scottish education have been highlighted as a challenge by a recent high-profile review carried out by the Organisation for Economic Cooperation and Development (OECD). It found that although Scottish education has many strengths, and performs at a very high standard in the Programme of International Student Assessment (PISA), there are serious inequalities associated with socio-economic status, poverty and deprivation (OECD 2007, p15).
- 6.2 This section draws on SSLS to provide further evidence of inequalities in young people's experiences of education in Scotland. It starts by summarising recent research findings relating to inequalities in education and youth transitions. It then presents new analyses of inequalities in attainment by gender and social class, and the extent to which they have changed over the period 1985-2005.

Evidence from recent SSLS special studies and the EYT project

- 6.3 Biggart (2000) analysed issues of gender and low achievement. He confirmed that females were less likely to be low attainers than males, and that low S4 attainment is associated with social background and neighbourhood deprivation. However, he found that – contrary to media speculation - negative attitudes to education were not associated with low attainment. Although only a minority of low attainers were female, the labour-market consequences of low attainment for young women are more severe than for young men.
- 6.4 Howieson (2003) explored the transitions and outcomes of young people who left school at age 16 - the end of the compulsory stages. She found that low attainment not only increases the chances of early leaving, it also influences early leavers' post-school prospects. Low attainers were the ones most likely to experience unemployment and to have unstable post-school careers. Compared with other early leavers, they also had a poorer chance of adding to their qualifications, and those in employment had poorer prospects of training. Although young women were less likely to be early leavers, those who did leave school early had poorer outcomes than their male counterparts, despite their higher average attainment. The study also found that Skillseekers has transformed government-supported training, and as a consequence may have excluded some lower-attaining young people – especially females. There was an increase in the proportion of early leavers neither in the labour market nor in education that coincided with the widespread implementation of Skillseekers.
- 6.5 Raffe (2003) focused on young people who were not in education, employment or training (NEET). He found that on average NEET young people had lower S4 attainments, had truanted more and had less favourable attitudes to school. Young people who were unemployed or looking after child

or home tended to have less advantaged social and educational backgrounds; they tended to be NEET for longer periods of time, and to be vulnerable to further spells of NEET. Despite better average qualifications and higher prior participation in education, females remained NEET for longer, and a gender gap opened as the cohort grew older. More females looked after child or home, or took part-time jobs, but fewer were unemployed.

- 6.6 Howieson and Iannelli (2007) traced the transitions of a cohort of young people from the end of compulsory schooling, and found that *“Low attainers had poorer labour market outcomes even at age 22-23: a smaller proportion of them were in full-time employment and they were more likely to be unemployed or in part-time employment”*. They also found a negative effect of low attainment on occupational status and average weekly earnings compared with other young people in employment. Amongst the low-attaining group, women appear to be more disadvantaged than men – a quarter of female low attainers were neither in employment nor the labour market at age 22-23.
- 6.7 At the other end of the scale, Tinklin (1999) focused on high-attaining female school leavers. She confirmed that there was a strong relationship between social advantage and high attainment: those with fathers in non-manual occupations, who had educated and home-owning parents, and who attended independent schools enjoyed distinct advantages at several stages of their school careers. But, while social advantage is strongly linked to high attainment, it does not shed any light on the female advantage in attainment: working-class girls did better than their male counterparts, just as middle-class girls attained more highly than middle-class boys. The only factor which goes some way towards “explaining” male and female differences in attainment was that girls took school more seriously than boys. There was evidence to suggest, however, that gender differences in subject choice at school have an important impact on later attainment and opportunities – and that the focus by girls on arts and social sciences subjects reduced their opportunities in higher education and employment.
- 6.8 The issue of subject choice was explored further by Croxford (2003) who analysed participation in science, engineering and technology. She found that having science qualifications at Higher Grade boosted chances of entering a degree course. Even amongst those with science qualifications, and after taking account of attainment, there were gender differences in higher education courses entered: females were less likely than males to study mathematics, informatics and engineering, but more likely to study medicine, dentistry or subjects allied to medicine.
- 6.9 Tinklin and Raffe (1999) studied the factors influencing entry to higher education in the early 1990s. They found that social-class differences in entrance to higher education narrowed during the expansion of the late 1980s and early 1990s, but leavers from middle class backgrounds were still more than twice as likely to enter higher education in 1993. Class inequalities in school-leaver entry to higher education largely reflect inequalities in school attainments, rather than the immediate impact of the higher education

selection process. They also found that female school leavers were less likely than males with equivalent qualifications to enter higher education.

Changing inequalities over time

- 6.10 For the EYT project, Croxford and Raffe (2007) analysed trends in attainment at age 16 in England, Wales and Scotland to explore the impact of different policies. They found that over a period of policy divergence, when England developed a strong market regime while Scottish policy changed much less, there was a parallel divergence in levels of social-class inequality: social-class inequalities narrowed in Scotland but did not do so in England. However, they are cautious in interpreting these trends in relation to market regimes, and suggest that the narrowing of inequalities in Scotland may be partly attributable to the reforms of curriculum and assessment associated with the introduction of Standard Grades.
- 6.11 Raffe *et al* (2006) investigated inequalities in levels of participation and attainment at ages 16 and 18+ and their relationship to educational expansion. They found that, in general, levels of inequality tend to be lower as the proportion achieving the outcome increases (although these trends are seen to be erratic in the short term). The later stages and higher levels of education tend to be more socially selective. Within each Scottish cohort the class gap was wider at 18 than at 16 years. By the late 1990s inequalities at age 18 were substantially wider in Scotland than in England. Inequalities in participation in higher education initially rose as higher education expanded in the early 1990s, but then fell to a level lower in 2001 than in the 1980s. They were consistently higher in Scotland than in England.

New analysis of inequalities over time

- 6.12 The focus of the current study is the extent to which inequalities in attainment have changed over the period 1985-2005. The measures analysed are derived from comparable⁹ measures of:
- attainment at age 16 – the Standard Grade point score;
 - attainment at 18/19 - the UCAS tariff score.
- 6.13 In order to explore change over time in the effects of a number of different factors, the time-series data are analysed using multivariate linear regression models (see Appendix 2). The effect of each factor is measured after controlling for all other factors in the model.

Inequalities in attainment at age 16

- 6.14 The model, summarised in Table 6.1 and detailed in Appendix 2, shows the following factors influence S4 attainment.

⁹ See Section 2 for an explanation for how these were derived.

Year

- 6.15 Results of the statistical model confirm an upward trend in attainment over time. However, the increase in attainment was steeper in the early period and levelled off for later cohorts.

Sex

- 6.16 On average females achieved more than males, and the female advantage increased over time. Thus the gap associated with gender widened very slightly over the two decades.
- 6.17 These trends are illustrated in Figure 6.1 by the average point score achieved by each sex at Standard Grade from the time-series data. The trends in Figure 6.1 are not as smooth as those suggested by the model, because the survey data for different cohorts fluctuate.

Social Class

- 6.18 There are substantial differences in attainment between the classes: pupils from managerial/professional backgrounds had the highest achievement; those from the intermediate class had attainment lower by a small but significant amount; working class and unclassified had substantially lower attainment. Over time the attainment gap between intermediate and managerial/professional students did not change. However, the attainment gap between working class and managerial/professional students reduced slightly over time. Similarly, differences between unclassified students and managerial/professional students reduced over time.

Figure 6.1

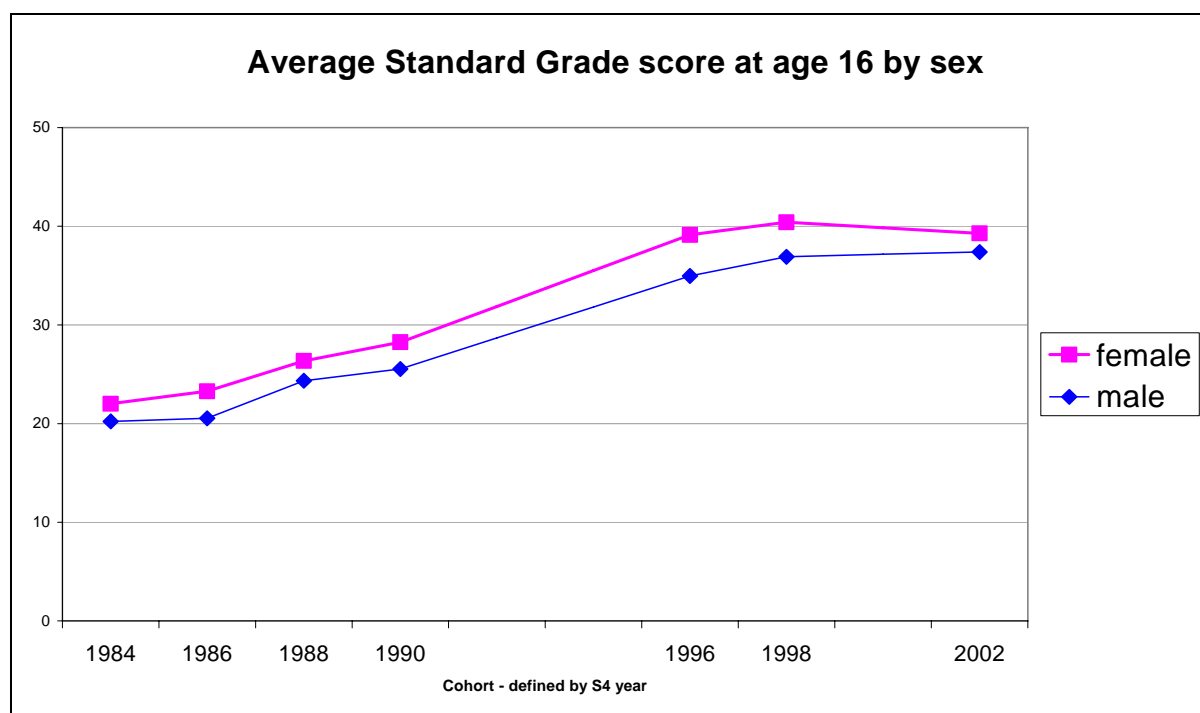
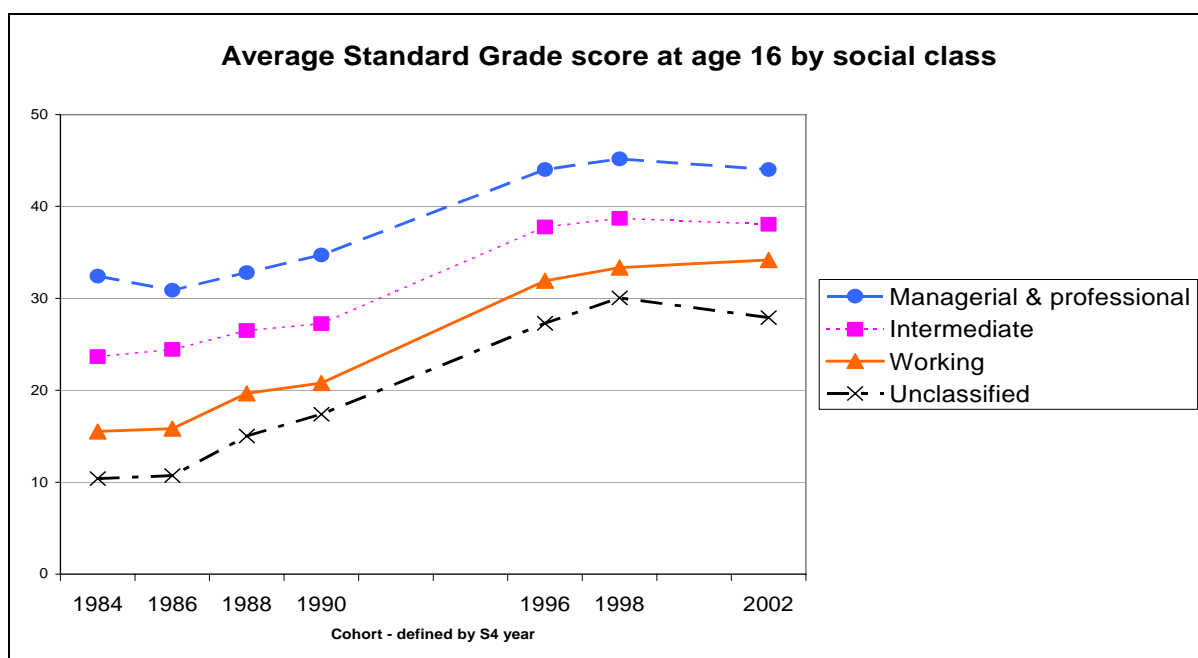
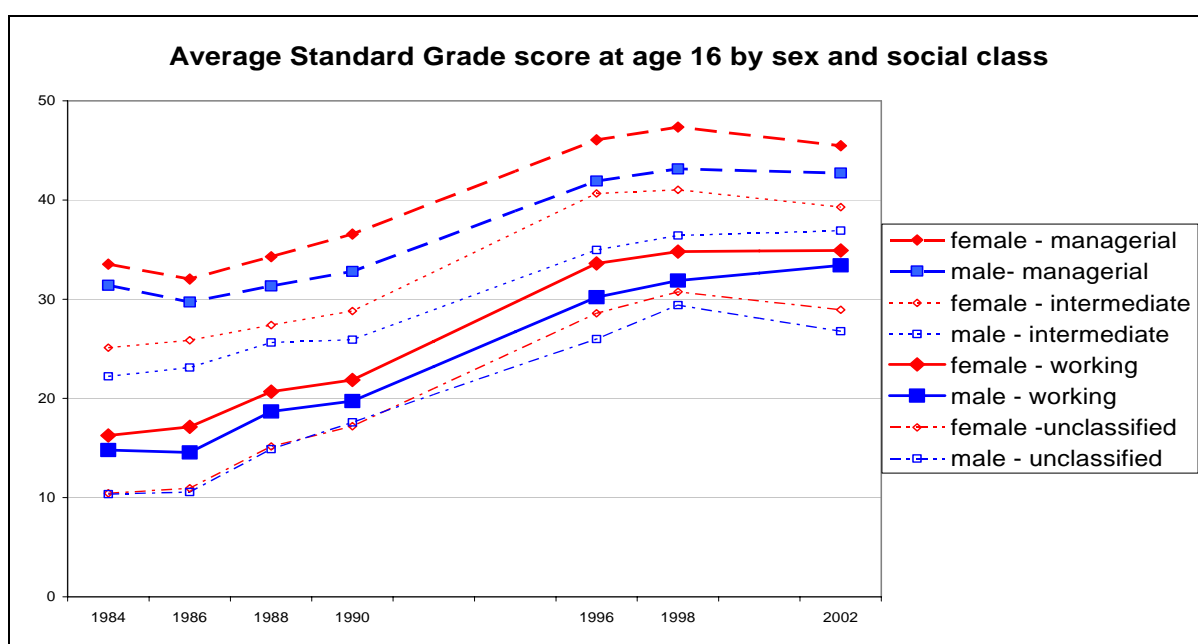


Figure 6.2



6.19 These social class trends in attainment are illustrated in Figure 6.2 in terms of the average point score achieved by each class at Standard Grade from the time-series data. In 1984, pupils with managerial & professional parents achieved 32 points on average compared with working class pupils who scored 16 points on average, and pupils for whom parental occupation could not be classified, who scored 10 points on average. All social classes shared in increasing levels of attainment between 1984 and 2002, but the gaps between them narrowed only slightly. In 2002, pupils from managerial & professional classes scored 44 points on average compared with 34 points and 28 points for working class and unclassified pupils respectively.

Figure 6.3



- 6.20 Both gender and social class make a difference to average attainment at Standard grade, and this is illustrated by Figure 6.3. Within each social class, average attainment by females exceeds average attainment by males.

Parents' education

- 6.21 An important factor in children's education is their parents' educational level. The model (Appendix 2 and Table 6.1) confirms that there is a positive effect on their children's Standard Grade attainment of both father's and mother's post-compulsory education. However, the advantage associated with parents education decreased over time.

Parents' main activity

- 6.22 Previous studies have suggested that parents' main economic activity may have an additional effect on pupils' attainment. Specifically, two aspects of parents' main activity – father unemployed and mother full-time unpaid in the home - have been found in previous analyses to influence attainment. The model confirms that having a mother full-time unpaid in the home is associated with higher attainment but this advantage decreased over time. On the other hand, having a father unemployed is associated with lower attainment, and this disadvantage decreased over time.

Family structure

- 6.23 Family structure also has effects on pupils attainment, and the model compares the average attainment of young people living with step parents, lone parents or in "other" arrangements¹⁰ with the attainment of young people living with both of their natural parents. In each case, family structures other than living with both natural parents are associated with lower attainment on average. However, the negative effect of living with a step parent diminished over the period while the negative effect of living in "other" arrangements was exacerbated over time.

School type and socio-economic characteristics

- 6.24 Schools vary in the socio-economic characteristics of their pupil intakes – this is shown by the segregation indices described in Section 3. Three measures are included in the models in order to estimate the changing effects of school characteristics on attainment. The first indicates independent fee-paying schools compared with state-funded schools. Two other measures are derived from the percentage of pupils in the school with managerial/professional parents, and the percentage with working-class parents. These differences in school context influence the attainments of pupils attending each school – **over and above all other factors in the model.**
- 6.25 The model (Appendix 2) shows that on average the Standard Grade points score was lower in independent schools than in state-funded schools, and this

¹⁰ This is not a clear category – it includes boarding schools, school hostels, other relatives and foster parents.

did not change over time. It is possible, however, that some of this difference in attainment can be explained by independent schools presenting their pupils for English qualifications such as GCSE that are not included in the Standard grade point score. Another explanation may be that the advantage associated with independent schools is derived from the high social-class intake of the pupils – and this is controlled for by the background factors included in the model.

- 6.26 Attending a school with a high percentage of managerial/professional pupils boosted pupils Standard Grade attainment. However, this advantage decreased over time.
- 6.27 Attending a school with a high proportion of working class pupils led to slightly lower attainment on average. This disadvantage did not change over time.

School location

- 6.28 The measure of school location has six categories, as shown by Figure 2.1 in Section 2. The largest category is “four cities”. The statistical model explored the extent to which school location influenced attainment. It found no difference in attainment between pupils attending city schools, schools in other urban areas, and schools in accessible town and rural areas. However, pupils attending schools in remote areas have higher average Standard Grade scores than pupils in city schools. There was some divergence in the pattern of results for remote areas over time - while the attainment advantage accruing to pupils in remote **towns** did not change, the advantage of pupils in remote **rural** schools increased.

Table 6.1: Summary of inequalities at age 16

Factor	Attainment gap	Did attainment gap increase or decrease over time?
Sex	Females have higher attainment than males	Increased
Social class	Managerial/professional pupils have higher attainment than working class and unclassified pupils	Reduced
Parents' education	Higher attainment if parents have some post-compulsory education	Reduced
Parents' main activity	Higher attainment if mother full-time (unpaid) in home	Reduced
Family structure	Lower attainment if father unemployed	Reduced
	Lower attainment if step-parent;	Reduced
	Lower attainment if lone parent;	Unchanged
School context	Lower attainment if other living arrangements	Increased
	Lower attainment if independent	Unchanged
	Higher attainment if high % managerial/professional	Reduced
School location	Lower attainment if high % working class	Unchanged
	Higher attainment if remote town;	Unchanged
	Higher attainment if remote rural	Increased

Inequalities in attainment at age 18

- 6.29 Attainment at age 18 is measured in terms of the UCAS tariff score.¹¹ The UCAS tariff is based on academic qualifications, and is used here because it offers comparability over time. The UCAS tariff underestimates overall attainment because it does not include vocational qualifications, but unfortunately information about more vocational qualifications has not been collected in a consistent manner by SSLS.

Overall trends over time

- 6.30 On average the UCAS tariff score increased each year, but the increase in attainment was steeper in the later period than for earlier cohorts – suggesting that the increase in attainment has accelerated.

Sex

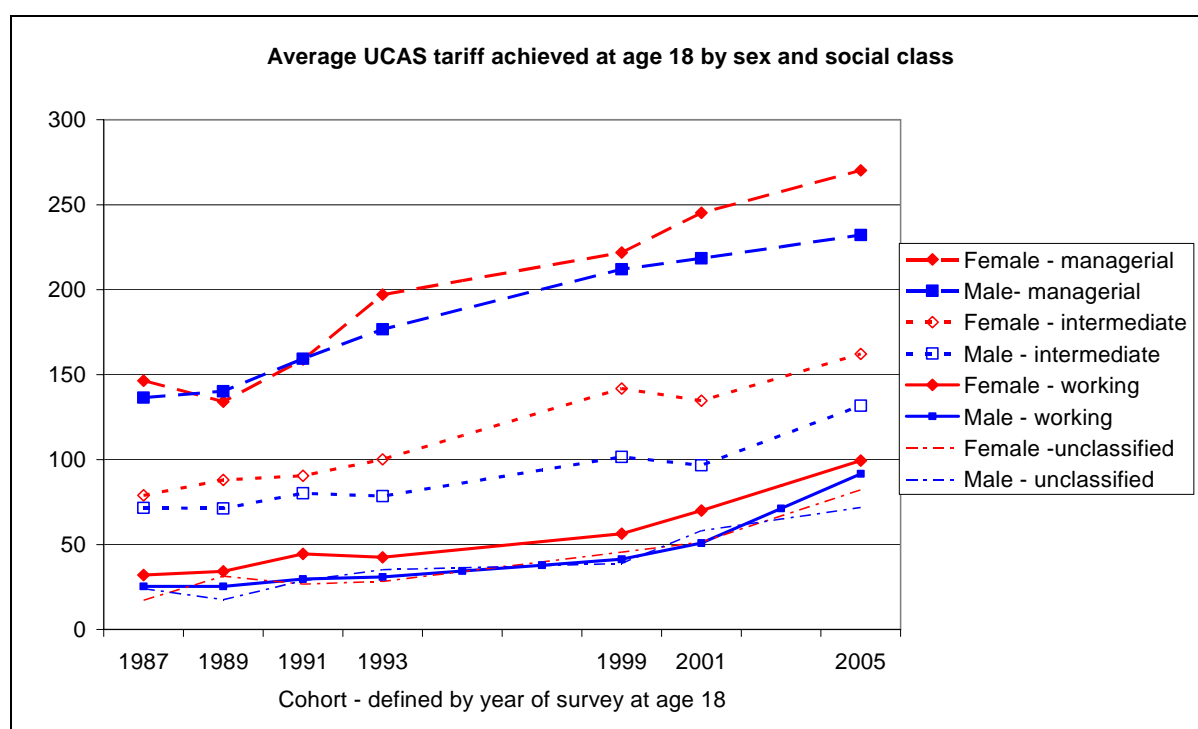
- 6.31 On average females achieved more than males, and the female advantage increased over time. Thus the gap associated with gender widened over the two decades.

Social class

- 6.32 Social class inequality in attainment of the UCAS tariff is very strong: managerial/professional students have a marked advantage at age 18. Compared with managerial/professional students, all other social classes had substantially lower average attainment. Over time, these inequalities increased still further.
- 6.33 These trends are illustrated in Figure 6.4 by the average UCAS tariff score achieved by each sex and social class from the time-series data. The trends in Figure 6.4 are not as smooth as those suggested by the model, because the survey data for different cohorts fluctuate, whereas the model averages out the fluctuations to estimate overall trends. However, they illustrate the following differential trends:
- the accelerating rise in attainment from 1999 onwards (which may be associated with the introduction of new NQ as a result of the Higher Still reforms);
 - the widening gender gap in favour of females;
 - the widening social class gap in favour of managerial/professional students.
- 6.34 However, the last data point in Figure 6.4 appears to indicate a dramatic rise in average attainment among the lower social class pupils between 2001 and 2005, and consequent reduction in the social class gap. This appears to provide evidence of a beneficial effect of the Higher Still reforms.

¹¹ for details of constituent qualifications see Table 2.6 in Section 2

Figure 6.4



Parents' education

6.35 The education experienced by parents is a strong factor influencing students attainment at age 18. On average, students achieved higher UCAS tariff scores if their father and mother had some post-compulsory education. Over time, the advantage associated with father's post-compulsory education did not change, but the advantage associated with mother's post-compulsory education was reduced.

Parents' main activity

6.36 Students whose mothers had been full-time unpaid in the home at S4 had higher average attainment at age 18 and this advantage did not change over time.

6.37 Those whose fathers had been unemployed at S4 had lower average attainment at age 18 and this disadvantage did not change over time.

Family structure

6.38 At age 18, there were disadvantages in attainment associated with having step parents, lone parents and other living arrangements in S4. Over time the disadvantage of having a step-parent did not change, but the disadvantage of having a lone parent or other living arrangements got worse.

School type and socio-economic characteristics

- 6.39 Students from independent schools have higher average UCAS scores than students from state-funded schools and the advantage accruing to independent schools did not diminish over time. The difference in effect of independent schools at age 18 compared with age 16 is probably because more take Scottish qualifications at age 18 as entry qualifications for Higher Education.
- 6.40 Students attending schools which had a high proportion of managerial/professional students also had higher average UCAS tariff scores and this advantage did not diminish over time. Schools with a high proportion of working class students did not differ from the average in their attainment at age 18.

School location

- 6.41 Students attending schools in urban areas and accessible towns had lower average UCAS scores than their counterparts in city schools. These differences did not change over time. In contrast to their higher performance at Standard Grade, there was no advantage accruing to students attending remote schools at age 18 (but note that students attending remote schools may have to move school and live away from home during the post-compulsory stages).

Table 6.2: Summary of inequalities at age 18

Factor	Attainment gap	Did attainment gap increase or decrease over time?
Sex	Females have higher attainment than males	Increased
Social class	Managerial/professional pupils have higher attainment than intermediate, working class and unclassified pupils	Increased
Parents' education	Higher attainment if parents have some post-compulsory education	Father's education: Unchanged Mother's education: Reduced
Parents' main activity	Higher attainment if mother full-time (unpaid) in home	Unchanged
Family structure	Lower attainment if father unemployed	Unchanged
	Lower attainment if step-parent;	Unchanged
	Lower attainment if lone parent;	Increased
School context	Lower attainment if other living arrangements	Increased
	Higher attainment if independent	Unchanged
	Higher attainment if high % managerial/professional	Unchanged
School location	no effect if high % working class	Unchanged
	Lower attainment if urban;	Unchanged
	Lower attainment if accessible town	Unchanged

Summary

- 6.42 The SSLS provides a unique resource for analysing inequalities in young people's experiences of education and youth transitions in Scotland. Previous studies have identified inequalities in curriculum, attainment, post-16 participation, entry to higher education and experiences in the labour market.

- 6.43 The current study builds on this work, and focuses on the extent to which inequalities in attainment at ages 16 and 18/19 have changed over time.
- 6.44 All other things being equal, females had higher attainment than males at age 16 and at age 18, and the gender gap for both age groups increased over time.
- 6.45 Social class is the greatest source of inequality in attainment. Over time the effect of social class on attainment has been reduced at age 16, but has increased at age 18. However, there is some indication that the Higher still reforms may have had a positive effect on the attainment of lower social class students.
- 6.46 Other aspects of family background, such as parents' education and main activity, have additional effects on attainment; over time the effect of most of these factors has been reduced at age 16, but has remained (more or less) the same at age 18.
- 6.47 School intake characteristics – especially the proportion of students from managerial/professional families - have additional effects on the attainment of students attending the school; over time the effect of school intake has been reduced at age 16, but has remained the same at age 18.
- 6.48 At age 16, schools in remote areas have higher average attainment than schools in cities, urban areas and accessible areas, and the advantage of remote rural schools increased over time. At age 18 the pattern was different, with schools in the four big cities having higher average attainment than other schools; this advantage of city schools did not change over time.

7 DISCUSSION

- 7.1 This study set out to explore three questions using time-series datasets based on the Scottish School Leavers Surveys:
1. How has the context of secondary schooling changed over the period 1985-2005?
 2. How have young people's school experiences and attainments changed over this period?
 3. To what extent have inequalities in attainment changed over this period?

Changing context

- 7.2 Secondary schools in Scotland – and society more generally – have had to adapt to major changes in socio-economic conditions over the past two decades. In the early 1980s half of young people were expected to leave school at age 16, with only the more academic pupils remaining in post-compulsory education. In subsequent years, as opportunities for young people to enter employment and training declined, schools had to cater for increasing levels of participation by students with varying levels of prior attainment.
- 7.3 Curriculum and qualification systems have been adapted to meet the needs of a wider ability range. In the early 1980s the qualification systems at Ordinary and Higher Grade were aimed at the top of the ability range. Over the 1980s and 1990s opportunities for young people to gain qualifications were widened - first the Standard Grade reforms provided certification for all abilities at age 16 (Gamoran 1996) and then the Higher Still reforms provided a flexible framework for post-16 qualifications (Raffe et al 2007).

Changing experience and outcomes

- 7.4 In the light of these reforms, it is not surprising that overall levels of participation and attainment have risen considerably over time. The SSLS data display clear upward trends in attainment, and decline in the proportion of young people with no qualifications. However, the school system still focuses on academic attainment, and there is strong polarisation between high and low attainers. Recent research on the effects of Higher Still reforms shows poorer pass-rates among students with lower prior attainment in spite of the provision of more appropriate courses (Raffe et al 2007).
- 7.5 The effect of low attainment on young people's life chances can be very severe. Although the current study does not look at trends in post-school outcomes, these issues have been analysed in previous studies based on SSLS (Biggart 2000, Howieson 2003, Raffe 2003). In particular, Howieson and Iannelli (2008) show the negative effects of low Standard Grade attainment on employment and income at age 22/23. The Scottish Government has developed policies seeking to reduce the numbers of young people who are not in employment, education or training (Scottish Executive 2006), and Education Maintenance Allowances help young people from low income families to continue their education after the age of 16 (Croxford et al 2002, 2005). Nevertheless, the post-compulsory stages are too late to tackle

the underlying causes of low attainment which have their roots at earlier stages of education. The Scottish Government's focus on providing for the development needs of children in the early years is an important policy to address these problems (Scottish Government 2009).

- 7.6 Although the SSLS does not have consistent time-series data on attitudes, the views about school experiences expressed by the more recent cohorts are remarkably positive. Even among lower-attaining pupils the majority have positive perceptions of the usefulness of school. Nevertheless, there is a substantial minority of young people who feel that school has done little to prepare them for life when they leave school.

Changing inequalities

- 7.7 Gender differences in attainment have increasingly been a focus of media attention in recent years, because statistics have revealed that young men have slightly lower attainment at school than young women. The SSLS time series shows that the gender gap was already evident in the 1984 cohort and thus pre-dated the Standard grade reforms. Thus, the evidence from SSLS counteracts suggestions by some researchers that the female advantage was created by the introduction of course work to the assessment system (Dolton et al 1999). The gender gap has increased over time – especially with respect to age 18/19. Experiences of school are gendered in other ways also, especially in terms of curriculum choices which have implications for future career opportunities (Tinklin 1999, Croxford 2003).
- 7.8 It may be that the aspirations and attainments of young women in Scotland are influenced by the restructuring of the labour market in favour of white-collar work and changing perceptions of gender issues in society. In addition, there are changing roles within the families of these young women, as an increasing proportion of their mothers are engaged in the labour market and in higher status occupations.
- 7.9 However, at a time when females have higher average attainment, those young women who do not achieve good qualifications at school are in a relatively worse situation than their male counterparts. Research based on the SSLS shows that low attaining young women have poorer labour market outcomes than low attaining young men (Biggart 2000, Howieson 2003, Raffe 2003).
- 7.10 The OECD review of Scottish education has highlighted the problems of social class inequalities (OECD 2007). In the past, less attention has been paid to social class than gender inequalities - possibly because statistics are less readily available. While advances have been made in the use of administrative data for analysis, these do not provide data on social class. Until now, the SSLS has provided an important source of evidence about social class inequalities in education and youth transitions, but suffers problems of measurement errors and potential non-response bias. In spite of the imperfections of SSLS data, they provide a consistent picture of changes in social class inequalities in attainment over the period 1985-2005. Since the Scottish Government has decided not to continue these surveys, in future

there will be less opportunity to analyse social class inequalities in Scottish education.

- 7.11 Findings from this study confirm those of the EYT study that social class inequalities at age 16 have diminished slightly since 1998 as the attainment of working class pupils has risen (Croxford and Raffe 2007, Raffe *et al* 2006). Raffe suggests that the reduction in inequality at the age 16 stage is associated with the expansion of Standard Grade to almost universal participation and attainment (Raffe *et al* 2006). The current study includes other measures of inequality associated with family background, including parents education and economic activity - which at age 16 present similar trends of reduced inequality. It is interesting to find that as the proportion of educated parents has increased, the advantage accruing to parents' education has declined.
- 7.12 However, social class inequalities in attainment at age 18/19 are rising over time as pupils of higher social class status have increased their levels of advantage in qualifications. We note also that while inequalities associated with parental education and economic activity diminished at Standard Grade, they did not diminish with respect to qualifications at age 18/19.
- 7.13 Differences between schools in their intake characteristics are associated with social segregation, and create a further source of inequality. This study has shown that social segregation between schools is greatest in city areas where there tends to be more segregated housing – schools in large public housing schemes are likely to have more working class pupils, while other schools are located in more middle class areas – this is sometimes called “selection by mortgage”. There has been considerable debate as to whether social segregation has been exacerbated by parental choice, but there is no clear evidence to support this view.
- 7.14 This study has examined the effects on young peoples attainment of attending schools with different intake characteristics. On average, they have higher levels of attainment if they attend schools with a high proportion of managerial/professional pupils. Over time, the advantage with respect to attainment at 16 diminished, and this is in line with the declining effect of pupils' own social class background. Conversely, the advantage accruing to high social class schools at age 18/19 is largely unchanged. Independent schools have unusual intake characteristics with a very high proportion of students with managerial/professional parents, and they have an additional effect on attainment at age 18/19 which did not change over time.
- 7.15 The different trends in inequality at ages 16 and 18/19 provide support for the suggestion of Raffe *et al* (2006) that increasing levels of attainment and participation at age 16 have pushed the critical period for educational inequalities up to age 18 and entry to higher education. In conclusion, the past two decades have witnessed major changes in the context of secondary schooling and substantial increases in attainment. However, underlying social inequalities within the system remain as powerful as ever.

8 REFERENCES

- Adler, M. (1997) Looking backwards to the future: parental choice and education policy. ***British Educational Research Journal*** 23 pp. 297-313.
- Adler, M., Petch, A. and Tweedie, J. (1989) ***Parental Choice and Educational Policy***, Edinburgh: University Press
- Biggart, A. (2000) Scottish School Leavers: Gender and Low Attainment, ***SSLS Special Report***, Edinburgh: Scottish Executive
- Bryce, T. and Humes, W. (2003) Scottish Secondary Education: Philosophy and Practice in T.G.K.Bryce and W.M.Humes (eds) ***Scottish Education***, Second Edition Post- Devolution, Edinburgh: Edinburgh University Press.
- Coleman, J.S., Campbell, E.Q., Hobson, C.F., McPartland, J., Mood, A.M., Weinfeld, F.D. and York, R.L. (1966) ***Equality of Educational Opportunity***. Washington DC: US Government Printing Office
- Croxford, L. (1994) 'Trends in the Scottish Curriculum Framework for the S3-S4 Stages 1983-90', ***Scottish Educational Review***, 26 (2) pp 97-109.
- Croxford, L. (2000) Is free-meal entitlement a valid measure of school characteristics? ***Educational Research and Evaluation***, 6(4) pp317-335
- Croxford, L. (2001) School differences and social segregation: comparison between England, Wales and Scotland. ***Education Review*** 15 pp. 68-73.
- Croxford, L. (2003) Participation in Science, Engineering and Technology: Evidence from the Scottish School Leavers Survey, ***CES Briefing No 30***
- Croxford, L. (2005) Social class coding. EYT Working paper. http://www.ces.ed.ac.uk/eyt/EYT_papers/WP04.pdf
- Croxford, L. (2007) Young people's experience of compulsory schooling in England and Scotland over twenty years of educational reform, Chapter 10 of Bhatti, G., Gaine, C., Gobbo, F. and Leeman, Y. (eds) ***Social Justice and Intercultural Education: an open-ended dialogue***, Stoke-on-Trent, Trentham Books, pp 145-168
- Croxford, L. and Cowie, M. (2005) Accounting for School Performance in Scottish Education Authorities, ***CES Briefing No 37***
- Croxford, L. Howieson, C., Iannelli, C. and Ozga, J. (2002) ***The Education Maintenance Allowances: Evaluation of the East Ayrshire Pilot***, Edinburgh: Scottish Executive Social Research
- Croxford, L., Iannelli, C. and Shapira, M. (2007) Documentation of youth cohort time series. EYT Working Paper 20.

- Croxford, L. Ozga, J. and Provan, F. (2005) ***Education Maintenance Allowances: Attainment of National Qualifications in the Scottish Pilots***, Edinburgh: Scottish Executive Social Research
- Croxford, L. and Paterson, L. (2006) Trends in social class segregation between schools in England, Wales and Scotland since 1984, ***Research Papers in Education***, 21 (4), 381-406.
- Croxford, L. and Raffe, D. (2007) Education Markets and Social Class Inequality: a comparison of trends in England, Wales and Scotland. R.Teese, S. Lamb and M. Duru-Bellat (eds) ***International Studies in Educational Inequality, Theory and Policy (Vol 3) Inequality: Educational Theory and Public Policy*** (Dordrecht: Springer).
- Croxford, L., Tinklin, T., Frame, B. and Ducklin, A. (2003) Gender and pupil performance: where do the problems lie? ***Scottish Educational Review***, 35 (2) pp 135-147
- Dolton, P., Makepeace, G., Hutton, S. and Audas, R. (1999) ***Making the grade***, York: Joseph Rowntree Foundation
- Echols, F.H., McPherson, A.F. and Willms, J.D. (1990) Parental choice in Scotland, ***Journal of Education Policy***, 5 (3), pp 207-222.
- Gamoran, S. (1996) Improving Opportunities: Changes in S4 Examination Scores, 1984-1990 ***CES Briefing No. 6***. <http://www.ces.ed.ac.uk/Briefings.htm>
- Gewirtz, S., Ball, S.J. and Bowe, R. (1995) ***Markets, Choice and Equity in Education***, Buckingham, Open University Press
- Gorard, S. and Fitz, J. (1998) The more things change...the missing impact of marketisation. ***British Journal of Sociology of Education*** 19 pp. 365-376.
- Gorard, S. and Taylor, C. (2002) What is segregation? A comparison of measures in terms of strong and weak compositional invariance. ***Sociology*** 36 pp. 875-895.
- Gow, L. and McPherson, A. (1980) ***Tell Them From Me: Scottish school leavers write about school and life afterwards***, Aberdeen: University Press
- Howieson, C. (2003) Destinations of Early Leavers: Evidence from the Scottish School Leavers Survey, ***CES Briefing No 28***
- Howieson C, Croxford L and Howat N (2008) ***Meeting the Needs for Longitudinal Data on Youth Transitions in Scotland - An Options Appraisal***, Scottish Government, Edinburgh
<http://www.scotland.gov.uk/Publications/2008/10/17104150/18>
- Howieson, C. and Iannelli, C. (2008) The effects of low attainment on young people's outcomes at age 22-23 in Scotland, ***British Educational Research Journal***, 34(2) pp 269-290

- Howieson, C., Raffe, D., Spours, K. and Young, M. (1997) "Unifying Academic and Vocational Learning: The State of the Debate", ***Journal of Education and Work***, 10(1), pp.5-35.
- HM Inspectorate (2006) ***Missing Out: a report on children at risk of missing out on educational opportunities***, Livingston: HMIE.
- Iannelli, C. (2005) Gender and social class differences in entry to higher education. EYT Working paper. Edinburgh, CES.
- Lynn, P., Purdon, S., Hedges, B. and McAleese, I (1994) England and Wales Youth Cohort Study: An assessment of alternative weighting strategies, ***Employment Department Research Series***, Sheffield: Employment Department.
- McPherson A and Willms J D (1987) Equalisation and improvement: some effects of comprehensive reorganisation in Scotland, ***Sociology***, 21 pp. 509-539.
- Noden, P. (2000) Rediscovering the impact of marketisation: dimensions of social segregation in England's secondary schools, 1994-99. ***British Journal of Sociology of Education*** 21 pp. 371-90.
- Organisation for Economic Cooperation and Development (2007) ***Quality and Equity of Schooling in Scotland***, Paris: OECD.
- Paterson, Bechofer and McCrone (2004) ***Living in Scotland: Social and Economic Change since 1980***, Edinburgh; Edinburgh University Press.
- Raffe, D. (2003a) CES findings on participation and attainment in Scottish Education, in Bryce and Humes (eds) ***Scottish Education: Second Edition Post Devolution***, Edinburgh: Edinburgh University Press, pp.795-803.
- Raffe, D. (2003b) Young People Not in Education, Employment or Training: Evidence from the Scottish School Leavers Survey, ***CES Briefing No 29***
- Raffe, D., Brannen, K., Croxford, L. and Martin, C. (1999) Comparing England, Scotland, Wales and Northern Ireland: the case for 'home internationals' in comparative research, ***Comparative Education***, 35, pp. 9-25.
- Raffe, D., Brannen, K., Fairgrieve, J. & Martin, C. (2001) Participation, inclusiveness, academic drift and parity of esteem: a comparison of post-compulsory education and training in England, Scotland, Wales and Northern Ireland, ***Oxford Review of Education*** 27, 2, pp.173-203.
- Raffe, D., Croxford, L., Iannelli, C., Shapira, M. and Howieson, C. (2006) Social Class Inequalities in Education in England and Scotland, ***CES Briefing No 40***
- Raffe, D. and Howieson, C. (1999) "The Scottish Experience of Reform: From 'Action Plan' to 'Higher Still'", in A. Hodgson and K. Spours (eds) ***Dearing and Beyond: 14-19 Qualifications, Frameworks and Systems***, pp.177-193, London: Kogan Page.

- Raffe D, Howieson C and Tinklin T (2005): 'The Introduction of a Unified System of Post-Compulsory Education in Scotland, **Scottish Educational Review** Vol 37, No 1, pp 46-57
- Raffe D, Howieson C, Tinklin T (2007) The impact of a unified curriculum and qualifications system: the Higher Still reform of post -16 education in Scotland. **British Educational Research Journal**, Vol 33, No 4 pp 479-508
- Raudenbush, S. W. and Willms, J. D. (1995) The estimation of school effects, **Journal of Educational and Behavioral Statistics**, 20, (4) pp 307-335 .
- Rose, D. and O'Reilly, K. (1998) **The ESRC Review of Government Social Classifications**. (London, National Statistics and ESRC).
- Scottish Education Department (1977a) **The Structure of the Curriculum in the Third and Fourth Years of the Scottish Secondary School**, Edinburgh: HMSO.
- Scottish Education Department (1977b) **Assessment for All: Report of the Committee to Review Assessment in the Third and Fourth Years of Secondary Education in Scotland**, Edinburgh: HMSO.
- Scottish Executive (2004) **A Curriculum for Excellence**: The Curriculum Review Group, Edinburgh: Scottish Executive.
- Scottish Executive (2006) **More Choices, More Chances: a strategy to reduce the proportion of young people not in education, employment or training in Scotland**, Edinburgh: Scottish Executive
- Scottish Government (2009) **The Early Years Framework**, <http://www.scotland.gov.uk/Publications/2009/01/13095148/0>
- Scottish Office (1994) **Higher Still: Opportunity For All**, Edinburgh: HMSO.
- Thrupp, M. (1997) How school mix shapes school processes: a comparative study of New Zealand schools, **New Zealand Journal of Educational Studies**, 32 (1), 53-82
- Thrupp, M. (1999) **Schools Making a Difference: Let's be Realistic! School Mix, School Effectiveness and the Social Limits of Reform**. Buckingham: Open University Press
- Thrupp, M., Lauder, H. and Robinson, T. (2003) School composition and peer effects, **International Journal of Educational Research**, 37, 483-504
- Tinklin, T. (1999) High Attaining Female School Leavers, **SSLS Special Report**. Edinburgh, Scottish Executive.

- Tinklin,T., Croxford,L., Ducklin,A. and Frame,B. (2001) ***Gender and pupil performance in Scotland's schools***. Report to Scottish Executive Education Department. CES, University of Edinburgh
- Tinklin, T, Croxford, L, Ducklin, A and Frame, B (2005, May) Gender and attitudes to work and family roles: the views of young people at the millenium, ***Gender and Education*** 17 (2) 129-142
- Tinklin, T. and Raffe, D. (1999) Scottish School Leavers Entering Higher Education. ***SSLS Special Report***. Edinburgh, Scottish Executive.
- Willms, J. D. (1996) School choice and Community Segregation: Findings from Scotland, in A.C. Kerckhoff (ed) ***Generating Social Stratification: Toward a new research agenda*** (pp133-151) Boulder, CO: Westfield Press.
- Willms, J. D. (1986) Social class segregation and its relationship to pupils' examination results in Scotland, ***American Sociological Review***, 51 (2) pp 224-241
- Willms, J. D. (1997) Parental Choice and Education Policy, ***CES Briefing No 12***
- Willms, J. D. and Echols, F. (1992) Alert and inert clients: the Scottish experience of parental choice of schools. ***Economics of Education Review***,11 pp 339-50.
- Willms,J.D. and Raudenbush,S.W. (1994) Effective schools research: Methodological issues, in n Husen,T. and Postlethwaite,T.N., (eds) ***The International Encyclopedia of Education***, Second Edition, Oxford: Pergamon Press
- Wolf, A. (2002) ***Does Education Matter? Myths about education and economic growth***, London: Penguin Books

A1 APPENDIX 1: MODELLING SEGREGATION

- A1.1 As part of the EYT project a methodology was developed to estimate social segregation in terms of the “variance ratio”, using multilevel statistical modelling (Croxford and Paterson 2006). The “variance ratio” may be thought of as measuring the extent to which working class pupils are concentrated in some schools, and upper class pupils are concentrated in others. A high variance ratio indicates that the social classes are isolated from each other in different schools, while a low variance ratio indicates that schools have mixed social intakes.
- A1.2 Multilevel modelling allows data analysis to take account of the hierarchical nature of the education system. With respect to segregation indices, multilevel modelling makes it possible to analyse differences in the distribution of working class pupils between schools, while taking account of differences in the size of schools and local authorities, and to calculate whether differences in indices of segregation have statistical significance (or whether they are likely to have arisen by chance). The test of statistical significance is of particular importance when using survey data, such as SSLS, that are subject to sampling errors.

Differences in segregation across Scotland

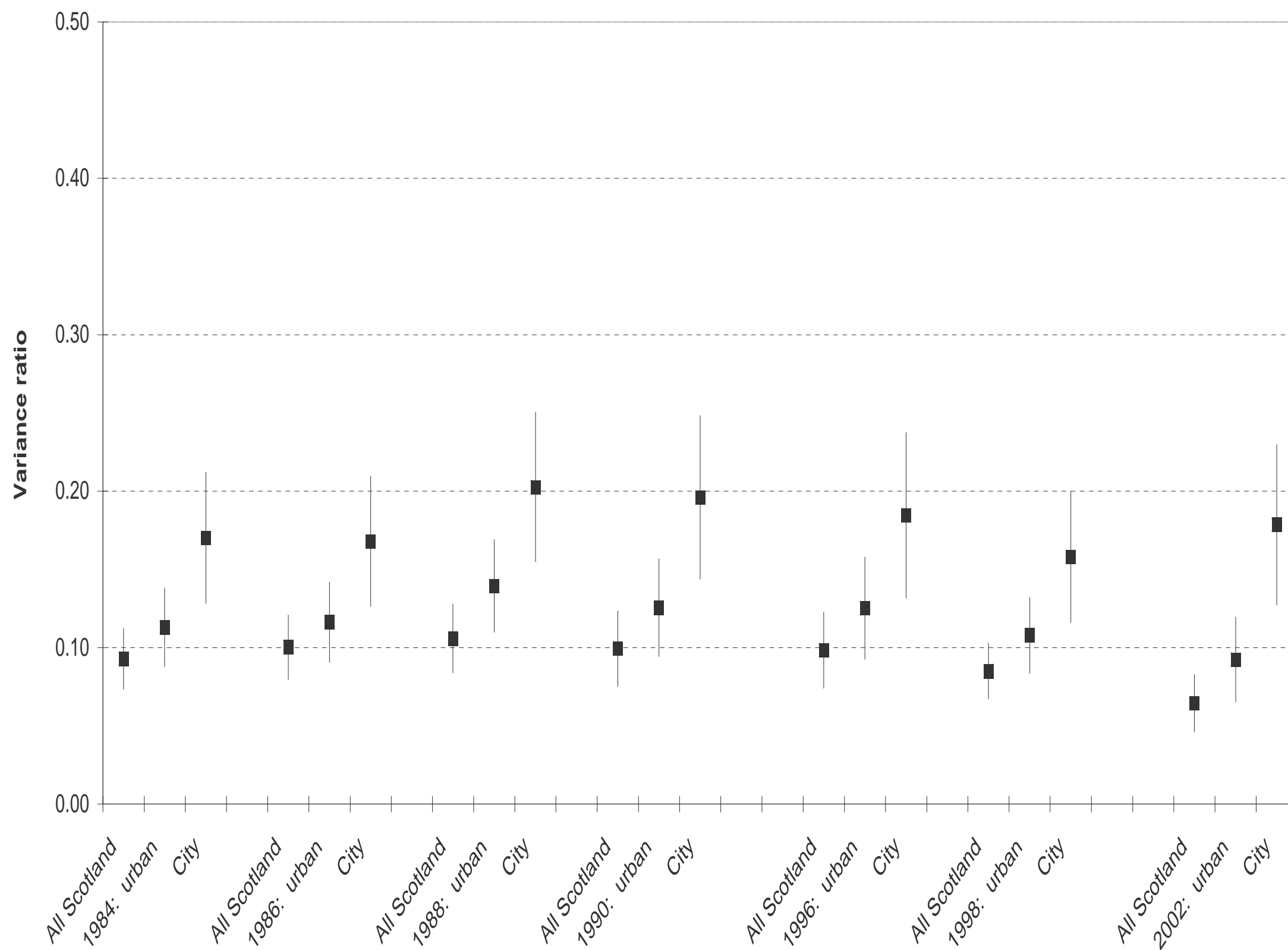
- A1.3 Figure A1.1 illustrates the index of segregation (measured by the variance ratio). The index focuses on the isolation of the lower two social classes (ie working class and unclassified) from the higher two social classes (ie managerial/professional and intermediate). It estimates the extent to which low-SES pupils are concentrated in low-SES schools.
- A1.4 The estimates of segregation in Figure A1.1 are shown by the small squares¹². The line through each square shows the 95% confidence intervals for the estimate. (We can say with 95% confidence that the true measure of social segregation lies between the upper and lower bounds of the confidence intervals).
- A1.5 Three estimates are shown for each cohort. The first (and lowest) point shows estimated segregation within the SSLS sample as a whole. The second point shows estimated segregation among the sub-sample (71% of the SSLS sample) who attend schools in urban or large city areas. The third (and highest) point shows estimated segregation among the sub-sample (37%) who attend schools within the four large cities (Aberdeen, Dundee, Edinburgh and Glasgow). It is clear from Figure 4.1 that segregation is considerably higher in the cities than in Scotland as a whole, or in urban areas more generally.
- A1.6 We can make comparisons between the estimates by using the confidence intervals. For example, looking at the 2002 cohort on the far right of Figure A1.1, the estimate for “All” is a little lower than the estimate for “Urban”, so it

¹² The actual numbers are not important here – the interest is in the patterns and trends they show.

appears that segregation is higher in urban areas than in Scotland as a whole. However, the confidence intervals for “All” and “urban” overlap, so we must conclude that the level of segregation in urban areas is not significantly different from that in Scotland as a whole. By contrast, the estimate for “City”, appears considerably higher than the estimates for “All” or “Urban” areas – and the confidence intervals do not overlap – so we can conclude that the levels of segregation in the four cities are significantly higher than in other parts of Scotland.

- A1.7 The pattern of trends over time is less clear. In Scotland as a whole segregation appears to have risen slightly from 1984 to 1988, and subsequently fallen. Unfortunately, statistical tests do not provide support for these overall trends, so we cannot be sure whether they are real or merely the result of chance.
- A1.8 One result that is statistically significant is that segregation in 2002 is lower than in 1988 – a result that may be the consequence of a number of additional factors including closure or merger of schools as the population has declined.
- A1.9 Although in urban and city areas there also appears to have been an upward trend from 1984 to 1988 followed by decline –these trends are not statistically significant.

Figure A1.1 Segregation of lower social class pupils (working class+unclassified) by cohort and area
(Index derived from variance ratio with 95% confidence intervals)



A2 APPENDIX 2: MODELLING INEQUALITIES IN ATTAINMENT

- A2.1 The focus of the current study is the extent to which inequalities in attainment have changed over the past two decades. In order to explore change over time in the effects of a number of different factors, the time-series data are analysed using multivariate linear regression models. The measures analysed are derived from comparable measures of:
- attainment at age 16 – the Standard Grade point score;
 - attainment at 18/19 - the UCAS tariff score.
- A2.2 These measures have been derived for all cohorts except the 1992 (reconstructed) cohort (see Section 2 for details).
- A2.3 The estimates from the models are summarised in Tables A2.1 and A2.2, and include the effects of number of factors describing personal, family background and school characteristics. The main effect of each factor is estimated in comparison with a reference category; for example, average differences in attainment associated with sex are shown by the estimate for “female” compared with “male” which is the reference category.
- A2.4 The models include “year” as a continuous measure, based on the year each cohort completed S4, in order to estimate overall change in attainment over time. The reference category for “year” is 1990, and the measure ranges from -6 (1984 cohort) to +12 (2002 cohort). In the model the estimates of changes in attainment over time are shown as change per year (compared with 1990). Thus the extent of change between 1990 and 2002 (a period of 12 years) can be calculated by multiplying the estimate by 12.
- A2.5 Estimating change over time using “year” as a continuous measure assumes that attainment changed in a continuous – linear - fashion. However, the charts in section 5 suggest that change may have been steeper in the earlier cohorts than the later cohorts (or *vice versa*), and that change may be better represented as a curve. In order to control for this curvilinear trend a further measure of “year” in the model is “year squared”. In the model, a negative estimate for “year squared” indicates that the upward trend in attainment has flattened out in later cohorts – and conversely a positive estimate indicates it has accelerated.
- A2.6 The key question addressed by the models is whether inequalities by gender, family background and school location have changed over time. Therefore, the changing effects of each factor over time are estimated by the interaction of the factor with “year”. The estimate for the interaction effect shows the extent of change in the effect of the factor **each year**. The estimate for the interaction effect should be compared with the main effect of the factor and the main effect of “year”.
- A2.7 The estimates show the effect of each factor after controlling for all other factors in the model.

A2.8 All the factors and interactions recorded in Tables A2.1 to A2.2 are statistically significant at the 95% confidence level. Factors that have been removed from the model because they are not statistically significant are denoted 'ns'.

Inequalities in attainment at age 16

A2.9 Table A2.1 shows the effects of each factor on attainment at age 16, measured by the Standard Grade point score. Results in the left side of the table are the "main effects" associated with each factor, and those in the right side are "interaction effects" indicating the extent of change over time.

Overall trends over time

A2.10 The estimate for "year" shows that on average the Standard grade point score increased by just over one point per year (the estimate is 1.03 per year). However, the negative estimate (-0.02) for "year squared" shows that the increase in attainment was steeper in the early period and levelled off for later cohorts.

Sex

A2.11 On average females achieved almost two points more than males (the estimate is 1.99). The interaction effects show that the female advantage increased over time by an average 0.08 points per year. Thus the gap associated with gender widened very slightly over the two decades.

Social Class

A2.12 The second estimate of inequality relates to parents' social class. The reference category for social class is managerial/professional, so the estimates compare the average attainment of intermediate, working class and unclassified pupils with the attainment of managerial/ professional pupils. The estimates show substantial differences in attainment between the classes (the estimate for intermediate class is -3.43; working class -8.12; unclassified - 11.3). The estimates for interaction effects show that the difference between intermediate and managerial/professional students did not change over time (interaction effect for intermediate*year is not statistically significant). However, the difference in attainment between working class and managerial/professional students reduced over time by 0.17 points per year – showing that inequalities reduced over time. Similarly, differences between unclassified students and managerial/professional students reduced over time by 0.31 points per year.

Parents' education

A2.13 An important factor in children's education is their parents' educational level. From the SSLS, parents' education is indicated by whether or not they had

some post-compulsory education.¹³ Table A2.1 confirms that both father's and mother's education has a positive effect on their children's Standard Grade attainment (the estimates are 4.67 and 5 points respectively). The advantage associated with parents education decreased over time (-0.24 and -0.25 points per year).

Parents' main activity

A2.14 Previous studies have suggested that parents' main economic activity¹⁴ may have an additional effect on pupils' attainment. Specifically, two aspects of parents' main activity – father unemployed and mother full-time unpaid in the home - have been found in previous analyses to influence attainment; these are included in the model, and compared with a reference category that includes full-time work, part-time work, retired, dead and “other”. On average, having a mother full-time unpaid in the home is associated with higher attainment (1.03 points), but this advantage decreased over time (by 0.08 points per year). On the other hand, having a father unemployed is associated with lower attainment (-4.41) but this disadvantage decreased over time (by 0.11 points per year).

Family structure

A2.15 The last factor relating to family background in Table A2.1 is family structure; it compares the average attainment of young people living with step parents, lone parents or in “other” arrangements¹⁵ with the attainment of young people living with both of their natural parents. In each case, family structures other than living with both natural parents are associated with lower attainment on average (the estimate for step parent families is -3.79; lone parent: -3.29; other: -6.25). However, the interaction effects show that the negative effect of living with a step parent diminished over the period (the estimate is 0.11 per year). The negative effect of living in “other” arrangements was exacerbated over time (the estimate is 0.32 per year).

School type and socio-economic characteristics

A2.16 Schools vary in the socio-economic characteristics of their pupil intakes – this is shown by the segregation indices described in Section 3. These differences in socio-economic characteristics may influence the experiences, aspirations and attainments of pupils attending each school. Three measures are included in the models in order to estimate the changing effects of school characteristics on attainment. The first indicates independent fee-paying schools compared with state-funded schools. Two other measures are derived from the percentage of pupils in the school with managerial/professional parents, and the percentage with working-class parents. In each case the percentage has been converted to a normal score

¹³ Data may not be entirely comparable over time. In cohorts 1984- 1998 the question asked the age at which parents had left school – age 17+ indicated they had some post-compulsory education. For the 2002 cohort the question was changed and asked whether parents had achieved any Highers.

¹⁴ Parents' main activity when respondents were in the S4 stage at school.

¹⁵ This is not a clear category – it includes boarding schools, school hostels, other relatives and foster parents.

with a mean of zero and a standard deviation of one – the estimates compare the effect of attending a school with a high proportion of managerial/professional parents, or a high proportion of working class parents, with the effect of attending a school where the class composition is average.

A2.17 Table A2.1 shows that on average the Standard Grade points score was lower in independent schools than in state-funded schools (-1.28), and this did not change over time. It is possible, however, that some of this difference in attainment can be explained by independent schools presenting their pupils for English qualifications such as GCSE that are not included in the Standard grade point score. Another explanation may be that the advantage associated with independent schools is derived from the high social-class intake of the pupils – and this is controlled for by the background factors included in the model.

A2.18 On average, pupils who attended a school with a high percentage of managerial/professional pupils had higher levels of Standard Grade attainment (the estimate is 2.01 points in a school where the % of managerial/professional parents is one standard deviation above the national mean). However, this advantage decreased over time (the estimated decrease is 0.1 points per year).

A2.19 On average, pupils had slightly lower attainment if they attended a school with a high proportion of working class pupils (the estimate is -0.36 points in a school where the % of working class parents is one standard deviation above the national mean). This disadvantage did not change over time.

School location

A2.20 Differences associated with school location are also estimated by the model. In view of the fact that pupils attending city schools are the largest category in SSLS (37%: see Section 2), city schools are used as the reference category in the model. All other things being equal, there is no difference in attainment between pupils attending city schools, schools in other urban areas, and schools in accessible town and rural areas. However, on average pupils attending schools in remote areas have higher average Standard Grade scores than pupils in city schools (the estimates are 1.76 in remote towns and 0.89 in remote rural areas). Over time the advantage accruing to pupils in remote towns did not change, but the attainment advantage of pupils in remote rural schools increased (the estimated increase is 0.17 per year).

Table A2.1 Factors influencing Standard grade attainment score at age 16 (estimates from regression model)

	Main effects		Interaction effects: Change over time in the effect of each factor	
	Estimate	Std. Error	Estimate	Std. Error
Change over time (vs. 1990)				
Year	1.03	0.02		
Year squared	-0.02	0.00		
Sex (vs. male)			Sex * Year interaction	
Female	1.99	0.14	0.08	0.02
Parents' social class (vs. Managerial/professional)			Parents' social class * Year interaction	
Intermediate social class	-3.43	0.18	ns	
Working class	-8.12	0.20	0.17	0.03
Unclassified	-11.30	0.29	0.31	0.04
Parents' education (vs. other responses)			Parents' education * Year interaction	
Father has post-compulsory education	4.67	0.24	-0.24	0.03
Mother has post-compulsory education	5.00	0.23	-0.25	0.03
Parents' main activity (vs. other categories)			Parents' main activity * Year interaction	
Mother full-time unpaid in the home	1.03	0.18	-0.08	0.03
Father unemployed	-4.41	0.28	0.11	0.04
Family structure (vs. own two parents)			Family structure * Year interaction	
Step-parent family	-3.79	0.32	0.11	0.05
Lone-parent family	-3.29	0.20	ns	
Other living arrangements	-6.25	0.46	-0.32	0.07
School context (vs. state-funded, average composition)			School context * Year interaction	
Independent	-1.28	0.38	ns	
% managerial/professional parents - 1sd above mean	2.01	0.14	-0.10	0.01
% working class parents - 1sd above mean	-0.36	0.13	ns	
Location of school (vs. city)			Location of school * Year interaction	
Urban	ns		ns	
Accessible town	ns		ns	
Accessible rural	ns		ns	
Remote town	1.76	0.30	ns	
Remote rural	0.89	0.41	0.17	0.06
Constant: mean of reference category	33.72	0.19		

Inequalities in attainment at age 18

A2.21 Table A2.2 shows the effects of each factor on attainment at age 18, measured by the UCAS tariff score (for details of constituent qualifications see Table 2.4 in Section 2). The UCAS tariff is based on academic qualifications, and is used here because it offers comparability over time. The UCAS tariff underestimates overall attainment because it does not include vocational qualifications, but unfortunately information about more vocational qualifications has not been collected in a consistent manner by SSLs.

Overall trends over time

A2.22 The estimate for “year” shows that on average the UCAS tariff score increased by just over four points per year (the estimate is 4.44 per year). However, the positive estimate (0.15) for “year squared” shows that the increase in attainment was steeper in the later period than for earlier cohorts – suggesting that the increase in attainment has accelerated.

Sex

A2.23 Table A2.2 show that on average females achieved almost ten points more than males (the estimate is 9.7). The interaction effects show that the female advantage increased over time by an average 1.21 points per year. Thus the gap associated with gender widened over the two decades.

Social class

A2.24 Social class inequality in attainment of the UCAS tariff is very strong: managerial/ professional students have a marked advantage at age 18. Compared with managerial/professional students, all other social classes had substantially lower average attainment (the estimated difference for students of intermediate class is -39, working class -75 and unclassified -80). Over time, these inequalities increased still further (the estimated attainment gap increased by two points on average for each of the three lower social classes.)

Parents’ education

A2.25 The education experienced by parents is a strong factor influencing students attainment at age 18. On average, students achieved higher UCAS tariff scores if their father and mother had some post-compulsory education (the estimates are 62.48 for father and 65.47 for mother). Over time, the advantage associated with father’s post-compulsory education did not change, but the advantage associated with mother’s post-compulsory education was reduced.

Parents’ main activity

A2.26 Students whose mothers had been full-time unpaid in the home at S4 had higher average attainment at age 18 (estimate 16 UCAS tariff points), and this advantage did not change over time.

A2.27 Those whose fathers had been unemployed at S4 had lower average attainment at age 18 (estimate 23.86 points) and this disadvantage did not change over time.

Family structure

A2.28 At age 18, there were disadvantages in attainment associated with having step parents, lone parents and other living arrangements in S4. (The estimated reduction in attainment for having a step-parent is -37.25 points;

lone parent -16.43; other living arrangements -56.02). Over time the disadvantage of having a step-parent did not change, but the disadvantage of having a lone parent or other living arrangements got worse).

School type and socio-economic characteristics

A2.29 Table A2.2 shows that students from independent schools have higher average UCAS scores than students from state-funded schools (estimate 64.89) and the advantage accruing to independent schools did not diminish over time. The difference in effect of independent schools at age 18 compared with age 16 is probably because more take Scottish qualifications at age 18 as entry qualifications for Higher Education.

A2.30 Students attending schools which had a high proportion of managerial/professional students also had higher average UCAS tariff scores (estimate 17.34) and this advantage did not diminish over time. Schools with a high proportion of working class students did not differ from the average in their attainment at age 18.

School location

A2.31 Students attending schools in urban areas and accessible towns had lower average UCAS scores than their counterparts in city schools. These differences did not change over time. In contrast to their higher performance at Standard Grade, there was no advantage accruing to students attending remote schools at age 18 (but note that students attending remote schools may have to move school and live away from home during the post-compulsory stages).

Table A2.2 Factors influencing UCAS tariff score at age 18/19 (estimates from regression model)

	Main effects		Interaction effects: Change over time in the effect of each factor	
	Estimate	Std. Error	Estimate	Std. Error
Change over time (vs. 1990)				
Year	4.44	0.36		
Year squared	0.15	0.03		
Sex (vs. male)			Sex * Year interaction	
Female	9.70	1.85	1.21	0.28
Parents' social class (vs. Managerial/professional)			Parents' social class * Year interaction	
Intermediate social class	-39.01	2.40	-1.70	0.35
Working class	-75.22	2.62	-2.31	0.39
Unclassified	-79.90	4.03	-1.81	0.59
Parents' education (vs. other responses)			Parents' education * Year interaction	
Father has post-compulsory education	62.48	2.55	ns	
Mother has post-compulsory education	65.47	2.78	-1.87	0.36
Parents' main activity (vs. other categories)			Parents' main activity * Year interaction	
Mother full-time unpaid in the home	16.06	2.31	ns	
Father unemployed	-23.86	3.87	ns	
Family structure (vs. own two parents)			Family structure * Year interaction	
Step-parent family	-37.25	4.15		
Lone-parent family	-16.43	2.98	-1.22	0.43
Other living arrangements	-56.02	6.27	-3.39	1.03
School context (vs. state-funded, average composition)			School context * Year interaction	
Independent	64.89	4.63	ns	
% managerial/professional parents - 1sd above mean	17.34	1.08	ns	
% working class parents - 1sd above mean	ns		ns	
Location of school (vs. city)			Location of school * Year interaction	
Urban	-4.47	1.97	ns	
Accessible town	-9.91	2.75	ns	
Accessible rural	ns		ns	
Remote town	ns		ns	
Remote rural	ns		ns	
Constant: mean of reference category	137.69	2.61		

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